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ANNUAL REPORT

OF THE

SUPERINTENDENT

OF

THE MONTREAL WATER WORKS,

FOR THE

YEAR ENDING JANUARY 31ST, 1865.

◆

Printed by order of the Water Committee.

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1901

ANNUAL REPORT.

To the Chairman and Members
Of the Water Committee.

GENTLEMEN,—

In accordance with the Resolution of the City Council passed on the 15th March, 1864, I have the honor to submit to your Committee my yearly Report for the year 1864.

AQUEDUCT.

The Canal, from its entrance at the Lachine Rapids to the Wheel-House, is in as good a condition as can be expected.

The water, from the Rock-cut Gates down to the Wheel-House, was drawn out twice during the summer, in order to connect to it the flume of the new water-wheel. During that time, the city was supplied from the Reservoirs, which were opened into the city-distribution pipes only a few hours per day, in order to economize the reserve until the Aqueduct could be re-filled again. Whilst the water was drawn out for the first time, in June last, an examination of the Canal was made by your Committee, in company with the City Councillors, and everything appeared then satisfactory.

In May last, the River St. Lawrence rose to such a height, that the water in the Aqueduct overflowed its banks in two or three places near the entrance, where these banks had settled down by the surface-water caused by the melting of the snow; but the opening of the sluices of the waste weir at the Wheel-House had the effect to reduce its level, and to prevent this inundation from doing any damage to the adjoining farms.

Every winter, during the months of February and March, the water in the Lachine Rapids, at the entrance of the Aqueduct, is lower than at any other period of the year. This present winter, it is lower than usual. This, with the ice that is formed on the Aqueduct to the thickness of about three feet, makes such a reduction of the area and water-power, that there is not sufficient water to drive the two wheels while the pressure of the Reservoir is on the city. This state of things has taken place, more or less, every winter since the beginning of the operation of these water-wheels. It is now a fact well established, that in winter, when the water at the entrance of the Aqueduct is lowered to the level of 36.50 feet above low water in the harbor,—that is, 14½ feet above the bottom of the wheels,—it is not sufficient to drive two of the wheels at their full speed under the Reservoir pressure, which is eighty pounds per square inch; although that same Aqueduct, in summer, is large enough to admit sufficient water for three wheels, even at the level of 36.50 feet.

As long as the supply of water to the city did not require more than the work of one of the wheels, it was not necessary to reduce or limit such supply; but for the last few years, as the consumption increased with the population of the city, there has been also an increased deficiency of water during the months of February and March,—so much so, that the Reservoirs have to be shut off during the greater part of that time, in order to keep a reserve of water for fires. It is to be hoped, that the erection of the new turbine-wheel will remedy this inconvenience, at least for some time to come, as it is built strong enough to supply the present population of the city by itself, and is likely to work at its full speed during the winter season. This experience, however, cannot be acquired before next year; the contractor, with all the possible diligence, not having been able to have it ready in time to be put in operation during this winter. If this should fail, further steps will have to be taken to secure to the city the means to provide a constant supply of water.

No expenditure was incurred during last winter in removing the anchor-ice from the entrance of the Aqueduct. The deepening of the mouth of the Canal, as well as the removal of the pier erected therein, has proved a great remedy to the evils arising from that source. During last spring, the ice carried away part of the lower pier which had been left standing. This accident, however, did not impair the efficiency of the works.

The keeper of the Aqueduct has kept everything in order during the year, such as cutting down the weeds on the banks of the canal, repairing the fences, cleaning the side-ditches, &c.

There has been 140 *pagées* of the original fence altered to the common picket-fence on Messrs. E. Guy and R. Knox's farms.

The farm bridges over the Aqueduct are beginning to give signs of decay, and will soon require renewal. The approaches to them will require repairs during next summer. I would suggest that a quantity of shales from the spoil-banks of the Rock Cut be drawn during the winter to every one of these bridges, in order to fill up the holes made by the washing of the rain-water. About one-hundred loads of that material will be required for that purpose. Repairs to the fences of these approaches will have also to be done during next summer.

The masonry of the bridges and culverts is in good order and did not require any repairs during the year.

The amount expended during the year for the alteration of fences, repairs to banks, ditches, &c., is $208.30.

WHEEL-HOUSE AND MACHINERY.

No repairs of any importance were made to the building of the Wheel-House. The roof is still in the same state. It should be covered with tin, as was done for the new extension of the building.

The machinery is still in the state as described in my last year's Report, with the exception of one of the air-vessels, which threatens to give way entirely. In November last, a large split occurred in the part of this air-vessel which connects with the rising main. This had the effect to stop the working of the machinery for a few days. It was repaired by putting two strong iron hoops, one around the air-vessel and the other around the branch leading to the rising main. Many important repairs are still required to the machinery, but cannot be done until the new wheel is put into operation. For these repairs, I beg leave to refer your Committee, to page 18, of the Report of D. Turbayne, Engineer in charge of the Wheel-House.

The heating of the building has always been costly, on account of the draught of cold moist air constantly brought in by the motion of the wheels. This cold draught might be concentrated into a wooden casing which would entirely enclose the wheels; but this cannot be done without exposing the wheels to frost. I believe, however, that a system of hot-water pipes, heated by a furnace, would prove more economical than the present system of coal-stoves. The amount of anthracite coal burnt last winter was 54.4 tons.

Schedule No. 8 shews the working of the wheels and pumps, as also the coal-oil and tallow expended.

Amount expended in repairs to machinery......	$ 241 70
Amount expended for fuel, oil, cotton waste, &c.	1,143 34
Total..	$1,385 04

EXTENSION OF WHEEL-HOUSE.

The different contracts for the extension of the Wheel-House and the new Pumping Apparatus are nearly all completed.

The building undertaken by Messrs. Champeau and Dufort, is now finished.

There is, however, an addition, apart from the contract, which your Committee has recommended to be done during next summer,—that is, the continuation outside of the building of the two walls that protect the rising main with an arched covering in brick, so that easy access may be had at all times to that portion of the rising main. The plans and estimates for that work are ready, and most of the stones on the ground. It now remains with your Committee to take the necessary steps to have the work carried into execution.

The new Pumping Apparatus, under Mr. McDougall's contract, is nearly completed, and has been apparently well made under the direction of the engineer, Mr. E. Geyelin. This new machinery, by the terms of Mr. McDougall's contract with the Corporation of Montreal, should have been in operation by this time; but the failure of some of the principal pieces, to which a work of such magnitude is often exposed, was the principal cause of the delay. The work, however, was pushed through with such activity, that there has been no cause for your Committee to complain. However, as a measure of precaution, which a public body always owes to its constituents, Mr. McDougall was put *en demeure* for all damages that may be caused by the non-fulfilment of his contract in time.

That part of the work under the immediate charge of the Corporation, not under contract,—such as the excavation, the timbers and concrete into the foundation, the puddling, the coffer-dams, the pumping of the water, &c.,—was executed with vigor, and at a larger cost than was at first anticipated; but the work was well performed.

It now remains to re-form the slopes and to level the banks. This cannot be done until the connection with the present rising main is made and the arch-tunnel built,—which will be, I hope, early in the spring.

The following statement exhibits the cost of the work as it actually stands:—

Champeau & Dufort's Contract	$15,720 90
McDougall's Contract	19,400 00
Days' work and Materials	8,808 33½
Engineer's Salary	1,550 00
Total	$45,479 23½

MILLWRIGHT'S DWELLINGS.

The Millwright's Dwellings are still in the same condition they were in last year. I have prepared plans and estimates for the re-construction of these dwellings, and as the making of the new machinery may necessitate one additional assistant millwright, I have provided also for an additional dwelling.

TAIL-RACE.

The Tail-Race of the new Pumping Apparatus was connected last fall to the main Tail-Race. For that purpose, the water was drawn below the dam and allowed to run through the sluices for the greater part of the summer, in order to allow the workmen to make the excavation and build the masonry necessary for this connection.

There has been but very little repairs done on the Tail-Race; every part of this work has stood well, and is still in good condition.

It has often been suggested by some members of your Committee to have ornamental trees planted along the banks; I now bring the subject again under your notice, so that, if agreed upon, the work may be done early next spring. I have prepared an estimate of the cost of this improvement.

The cost of Repairs on the Tail-Race during the year 1864 is	$ 233 25
Paid Richd. Philbin, Balance of Contract	2,000 00
	$2,233 25

PIPE-TRACK.

The line of the Pipe-Track is in good order. The tunnel under the Lachine Canal was pumped out last spring while the water was out of the canal. The pipes were found in good condition and free from leakage. The tunnel was cleaned out, and re-filled again with water.

The fences have been repaired on that part of the Hon. F. A. Quesnel's property which was sold to Messrs. A. M. Delisle and W. Workman; but that portion from St. Antoine Street to Dorchester Street is still in the same condition it was last year. As this fence was found to be too expensive to keep in repair, on account of the steep hill through which it passes, and of the land-slides that take place near Dorchester Street, your Committee have asked authority from the City Council to acquire from the Hon. F. A. Quesnel a strip of land, of fifty feet wide, along the line of the Pipe-Track, in order to make room for the pipes, and also to establish a more permanent line of fencing, which otherwise would have necessitated expensive crib-work to retain it. This, it is expected, would put an end to the claims for damages repeatedly preferred by the proprietors of the adjoining land.

While on this subject, I cannot help reiterating the remark made in my last year's Report, which is, that in making arrangements with proprietors from whom land is to be acquired for public purposes, care should be taken to free the Corporation from the servitude of maintaining fences, ditches, &c., which has invariably been borne by the City in the purchase of lands for the Water Works; thus entailing upon the Corporation innumerable difficulties and endless claims for compensation.

The amount spent this year on that portion of the work, for repairs and pumping the tunnel, is $232.87.

RESERVOIRS.

The road at the north-west side of McTavish Street Reservoir, in front of Messrs. H. Allan and H. Taylor's properties, has been widened, macadamized and drained by paved gutters.

A temporary fence has also been erected along the road, in continuation of that already erected the year previous, so that now the land of the reservoir is mostly all enclosed.

Part of the railing on the front slope of the reservoir, which had fallen down by the settlement of the banks, has been re-set and the banks re-formed to their original level.

The stone lining of these slopes is bulged out in many places, and in others the stones have gone to decay. I have prepared plans and estimates for covering these slopes with grass sods, and drain them by means of gutters and shafts.

The roof of the valve-house is so decayed that the beams holding the boards of the ceiling had to be propped in order to prevent them from falling down. This rapid decay is greatly due to the manner this roof was constructed. I have also prepared plans and estimates for altering this roof, which are herewith submitted.

The excavation for the extension of this Reservoir is slowly progressing every year. The top surface is mostly all dug down to the solid rock, and the Road Department is taking out every year all the black stones required for the macadam of the streets. A good many veins of trap-rock are also met with in the excavation, which make an excellent material for macadam.

The Coteau-Barron Reservoir is still in good order, and was used on two different occasions during the year. The keeper's house of this Reservoir is in a very dilapidated state, and requires repairs. Amount expended on Reservoirs:—

Cost of Road	$1,017 42
Fencing and Repairs to Bank	255 34½
Repairs to Coteau-Barron Reservoir	16 81
	$1,289 57½

PROPOSED NEW RESERVOIR.

The question of a large Reservoir will soon be agitated; and, as the present land owned by the Corporation for such purpose is quite insufficient to make a Reservoir that would be adequate to the rapidly increasing population of the city, immediate steps should be taken to acquire a larger site on the same level of the McTavish-Street Reservoir, before the land gets too high in value.

With a view to help your Committee in the choice of the best site, I have had a survey made and levels taken of part of the land laying on the south slope of the Mountain, west of Guy Street and north of Sherbrooke Street. By its position and level, this land seems the best adapted for the construction of a large Reservoir. I have prepared plans shewing the whole of that land. A great advantage it offers, is, that from the Wheel-House, it is the nearest point where such a level can be obtained,—that is, a level as high as that of the Reservoir of McTavish Street, and requires a shorter length of rising main, and consequently a proportionate additional power in pumping. Besides being all on the same level, no alteration would be required in the system of distribution-pipes.

MAIN PIPES.

There has been laid during the summer 1864, 3,712 lineal feet of 6-inch, and 9,040 lineal feet of 4-inch Cast-Iron Pipes,—making a total of 12,752 lineal ft. Schedule No. 1 shews the streets and wards in which they have been laid. Schedule No. 2 shows the total length of main pipe laid into the streets of the city up to the present day. That is:—17,947 lineal feet of 24-inch, including the rising main, 2,650 lineal feet of 16-inch, 14,384 of 12-inch, 34,070 of 10-inch, 7,460 of 8-inch, 126,917 of 6-inch, 233,847 of 4-inch Cast-Iron water main Pipes, with 3,185 feet of Lead main Pipe; forming a total length of 443,052 lineal feet, or nearly 84 miles.

STOP-COCKS.

Five Stop-cocks of 6-inch and 4 of 4-inch have been laid during last summer, as shewn in Schedule No. 1. This, added to those previously laid, forms a total of 610, as seen by Schedule No. 2. Eleven Stop-cocks have been renewed during the year.

The principal cause for so many renewals, is, that these Stop-cocks were deficient in the construction.

For a few years past, however, they have been made upon another plan, which has proved a great improvement on the first one.

FIRE-HYDRANTS.

The number of Fire-Hydrants has been increased by nine new ones, six of which were put up by the City and three by private parties, as seen by Schedule No. 1, forming a total of 527 public Fire-Hydrants and 31 private ones. There has been six of them renewed during the year.

The number of Hydrants found frozen in the winter of 1863–64, with the number of times they were found frozen, and their location, is shewn by Schedule No. 4. Eighty-five Hydrants were found frozen 182 times; that is, 29 Hydrants, 43 times, caused by the rise of the River St. Lawrence; 29 Hydrants, 82 times, by want of sewerage; 2 Hydrants, 4 times, by leakage; and 25 Hydrants, 53 times, by different other causes.

This, compared with the number of those of the year previous, shews a great diminution of the casualties in favor of this year. It will be, I hope, still more so, when the system of sewerage is completed.

The renewing and maintaining the Hydrants in order during the whole year has cost the City $1,347.77½.

REPAIRS TO DISTRIBUTION-PIPES.

The repairs done to main pipes are indicated in Schedule No. 5, which shews that there occurred 29 breaks and 40 leaks in the main pipes, making in all 69; that is, three more than last year. There has been also five hydrants repaired. A great part of these leaks and breaks is due to the excavation of the different streets where sewers are put down. After the completion of the sewerage, I hope to see a great diminution of these casualties.

The total amount expended this year for the general repairs and maintenance of the Distribution-Pipes is:—Mens' wages, Materials, &c., $4,614.00.

SERVICES.

There has been 602 houses supplied with Service-Pipes during the year, as shewn per Schedule No. 1, making a total, with those previously laid, of 11,683, supplying 13,603 dwellings, 2,225 stores and offices, 343 innkeepers, 154 factories, and 235 horse-power engines, as seen per Schedule No. 6.

The total length of lead pipe laid during the year 1864 is 28,426 lineal feet, making 41.30 tons weight of lead.

The amount spent for mens' wages and materials, in laying the pipes through the different streets of the city during the year, has been $23,230.09½.

PUBLIC FOUNTAINS.

All the public Fountains have been kept in good order, with the exception of those in Viger Square, where a great deal of water has been wasted. The basins of these fountains, which are made in earth, do not keep the water in, unless a constant et jis allowed to play. Steps should be taken to have these basins made water-tight.

The Drinking Fountains have been altered from a self-acting stop-valve to a simple 3-16-inch tube, which let out a constant stream of water. This plan seems the best adapted for the purpose, and less expensive to keep in repair.

The amount spent in keeping and repairing public Fountains is $105.03½.

CONSUMPTION OF WATER.

The average daily consumption of water during the year has been 4,063,000 galls., as shewn by Schedule No. 7. In this average is included 15,283,000 gallons used in watering the streets and 1,029,000 gallons for flooding rinks and cleaning sewers. This, compared with the previous year, shows an increase of 77,800 gallons per day.

The Schedule No. 9 shows the average daily consumption for each month of the year since 1858.

By this schedule, it would appear that the consumption has not increased this year at the rate it has been in former years, although there has been a greater number of service-pipes laid during 1864 than there was the previous year. This is accounted for partly by the fact, that the city last year was deprived of the constant supply on several occasions, and consequently consumed a good deal less water during that time.

The want of water now experienced every winter, on account of which it is necessary to render the supply intermittent during that time, is increasing every year, and will continue to be so with the increasing population of the city, unless the citizens are deeply impressed with the urgent necessity to be more watchful in preventing the waste of water in their premises.

Many people allow their water-taps to run constantly in winter through their water-closets or sinks, in order to prevent the freezing of their water-pipes,—so much so, that the consumption of water, which should be less in winter than in summer by the large quantity used for the public fountains and the watering of the streets, is found to be scarcely diminished, as can be seen by referring to Schedule No. 7, and comparing the average for January with the average for any of the summer months, and would likely be so for February and March, if the full supply could be given at that time.

As it is very difficult for the Water Works Department, even with the most stringent by-laws, to put a stop to this increasing evil, it remains to make an earnest appeal to the good-will of the citizens to protect themselves by more care and attention to repress these abuses; because, once the city is reduced to the intermittent supply, the security against fires will be reduced and the insurance premiums raised in consequence. This, with the high water-tariff and the prospect of having to spend great sums of money to enlarge the works, ought to be sufficient reasons to induce every citizen to stop any undue waste in their premises, and by that means postpone for a number of years the necessity of enlarging the works.

MANAGEMENT.

The management of the Working Department of the Water Works (thanks to the efficient and most convenient system of telegraph now in use in this city,) has been carried on from the office of the Superintendent, at the City Hall, where, every day, reports are received from and orders transmitted to the workshops, reservoirs, wheel-house, and the foreman laying the water-pipes in the streets.

The workshop is controlled by a foreman, who has the charge of all the material lying in the shop, store, yard, such as cast-iron and lead water-pipes, all brass and tin works, and all other material, and who keeps account of what comes in and goes out of these premises. This foreman has also command over all the mechanics who are attached to the workshop, such as plumbers, pipe-layers, valve-men, blacksmiths, masons, carpenters, &c., and has to keep their time-list.

The keeper of the Reservoir has to exercise a careful watch over the water in the Reservoir, so as to prevent any nuisance being committed; to gauge its level every day, and record it; and to keep a general supervision over all the Reservoir grounds.

The chief millwright at the Wheel-House has under his control the working and keeping of the wheels and pumping machinery, the regulation of the level of the water in the Aqueduct, and the management of the rising main and tail-race. He has also under him the assistant millwright and the Aqueduct keeper who has charge of the whole line of the Aqueduct.

Another foreman attends to the laying of the water-pipes into the streets of the city and has charge of the squads of men making the different excavations for laying the main and service pipes, and has to see also that these excavations are well taken care of at night. He may order from the workshop such material and such mechanics as are required to perform the different parts of his work, to return every week in the office of the Superintendent the time-list of his men, the amount of work done, and the streets where it is done. This foreman is generally employed only in the summer season, when the work of the pipe-laying is going on.

Whenever there is large works going on, such as the making of the new tail-race, the extension of the wheel-house, temporary foremen and inspectors are then employed while the work is progressing.

Before closing this Report, I have to thank all the employés under my control for their good conduct, their assiduity and energy in carrying out all the orders that were communicated to them.

I have the honor to be,
Gentlemen,
Your most obedient servant,
LOUIS LESAGE,
Superintendent of Water Works.

MONTREAL, March 13th, 1865.

Wheel-House, Montreal Water Works,
7th February, 1865.

Louis Lesage, Esq.

Sir,—At your request, I beg to submit the following statement of work required to be done at the Wheel-House:—

1.—The four lower valves of the pumps require new bushes.

2.—Air-vessels to be repaired or renewed—leaking very bad.

3.—Water-wheels to be well cleaned and painted with two coats paint.

4.—The joints of the wall, at top of waste-weir, to be pointed and made tight, as at present the water runs through the walls of the building, destroying the beams and flooring.

5.—Both crank-shafts to be lined, and eight new brass bushes required for the same; the upper brasses may answer for one or two years more.

6.—Owing to the extension of Wheel-House, the joining of new and old buildings has never been properly made, and leaks much, and should be repaired without delay; in fact, the present slate roof leaks all over, and wants repair or to be renewed.

I am, Sir,
Most respectfully,
DAVID TURBAYNE.

APPENDIX.

SCHEDULE No. 1.—Showing the Pipes, Hydrants, Stop-Cocks, Services, &c., laid down in the City during the Year 1864:—

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
EAST WARD.												
St. Gabriel	....	......	......	....	....	....	..	....	1	18	57	1
Jacques Cartier S.	....	......	......	....	....	....	..	....	....	41	130	1
Water	....	......	......	....	....	....	..	....	....	24	76	....
Notre Dame	....	......	......	....	....	....	..	....	4	210	792	5
St. Paul	....	......	......	....	....	....	..	....	3	99½	314	4
Total	....	......	......	....	....	....	..	....	8	392½	1369	11
CENTRE WARD.												
St. Lambert	....	......	......	....	....	....	..	....	1	46	146	2
Total	....	......	......	....	....	....	..	....	1	46	146	2
WEST WARD.												
Fortification	....	......	......	....	....	....	..	....	3	67	213	3
St. Nicholas	....	......	......	....	....	....	..	....	1	83	317	1
Craig	....	......	......	....	....	....	..	....	1	63	200	1
St. Peter	....	......	......	....	....	....	..	....	3	71	224½	3
St. Alexis	....	......	......	....	....	....	..	....	1	23	73	1
St. Frs. Xavier	....	......	......	....	....	....	..	....	2	118	374	1
St. Helen	....	......	......	....	....	....	..	....	4	123	390	4
Notre Dame	....	......	......	....	....	....	..	....	1	25	79	1
Common	....	......	......	....	....	....	..	....	2	61	193½	2
Victoria Square	....	......	......	....	....	....	..	....	....	2	9	1
Lemoine	....	......	......	....	....	....	..	....	1	29	92	1
St. John	....	......	......	....	....	....	..	....	2	40	127	2
Total	....	......	......	....	....	....	..	....	21	705	2292	21

SCHEDULE No. 1—(Continued.)

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
ST. ANN'S WARD.												
Richardson	....	168	168	....	....	....	..	....	5	270	855½	5
Magdalen	....	299	299	....	....	....	..	....	3	121½	385	4
Olier	....	540	540	....	1	1	..	1	4	145	459	5
St. Joseph	55	......	55	....	1	1	..	1	2	134	424	2
Manufacturers	....	319	319	....	....	....	..	....	6	397	1257	6
Seigneurs	....	32	32	....	....	....	..	....	1	32½	103	2
Colborne	....	......	......	....	....	....	..	..	4	194½	615½	5
Smith	....	......	......	....	....	....	..	....	3	50	158	3
Dupré Lane	....	......	......	....	....	....	..	....	1	24	76	1
William	....	......	......	....	....	....	..	....	12	893½	2829½	19
Murray	....	......	......	....	....	....	..	....	3	60	189	3
Grand Trunk	....	......	......	....	....	....	..	....	4	197	619½	6
St. Patrick	....	......	......	....	....	....	..	....	4	228	721	4
Ottawa	....	......	......	....	....	....	..	....	6	235	745	8
Eleanor	....	......	......	....	....	....	..	....	2	108	342	2
College	....	......	......	....	....	....	..	....	1	25	79	1
McCord	.. ..	......	......	....	....	....	..	....	3	109½	346½	4
Nazareth	....	......	......	....	....	....	..	....	1	19	60	1
McGill	....	......	......	....	....	....	..	....	1	118	373	1
Seminary	....	......	.....	....	....	....	..	....	1	60	190	1
Guy	....	......	......	....	....	....	..	....	1	83½	264	2
Common	....	......	......	....	....	....	..	....	3	75	238	3
Barré	....	......	......	....	....	....	..	. ..	1	150	475	1
Basin	....	......	......	....	....	....	..	....	1	113	358	1
Duke	....	......	......	....	....	....	..	....	1	16	51	1
Kempt	....	......	......	....	....	....	..	....	1	48½	153½	2
Dalhousie	....	......	......	....	....	....	..	....	4	310	981	4
Wellington	....	......	......	....	....	....	..	....	3	153½	486	4
Congregational	....	......	......	....	....	....	..	....	2	87	286	2
Shannon	....	......	......	. ..	....	....	..	....	....	60	190	
Centre	....	......	......	....	....	....	..	....	4	284	900	4
St. Francis	....	......	......	....	....	....	..	....	3	110	348½	3
De la Ferme	....	......	......	....	....	....	..	....	2	88	279	2
Total	55	1358	1413	....	2	2	..	2	93	5000	15837½	112
ST. ANTOINE WARD.												
Peel	....	36	36	....	....	....	..	....	13	811	2587	13
St. Bonaventure	....	272	272	....	....	....	..	....	8	710	2247	10
Fulford	....	468	468	....	....	....	..	....	2	84½	267½	3
Delisle	....	415	415	....	....	....	1	1	2	86	272	4
Workman	....	72	72	....	....	....	..	....	2	57	180½	2
St. Catherine	648	......	648	1	....	1	1	2	2	123	390	2
Lane off St. Catherine	....	160	160	....	....	....	..	....	....	......	......	....
Carried over	648	1423	2071	1	....	1	2	3	29	1871½	5944	34

SCHEDULE No. 1—(Continued.)

Names of Streets.	Length in Feet of Cast-Iron Pipes.			Number of Stop Cocks.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
St. Antoine—*Con.*												
Brought forw'd.	648	1423	2071	1		1	2	3	29	1871½	5944	34
Lane off Aqueduct	....	366	366	....	....	....	..	....	5	366	1159	5
Lane off Richm'nd	....	188	188	....	....	....	..	....	5	134½	426	7
Richmond	....	....	....	....	....	....	..	....	6	272	852½	9
Mountain	....	....	....	....	....	....	..	....	7	346	1096	7
Lagauchetière	....	....	....	....	....	....	..	....	2	64	203	2
Bisson	....	....	....	....	....	....	..	....	1	27	85½	1
University	....	....	....	....	....	....	..	....	6	364	1153	6
Dorchester	....	....	....	....	....	....	..	....	10	325	1073	12
St. Felix	....	....	....	....	....	....	..	....	1	52	165	1
Latour	....	....	....	....	....	....	..	....	7	334½	1056	10
Busby Lane	....	....	....	....	....	....	..	....	1	63	200	1
Seigneurs	....	....	....	....	....	....	..	....	4	140	443	5
Chatham	....	....	....	....	....	....	..	....	1	90	285	1
Little St. Antoine	....	....	....	....	....	....	..	....	....	80	253	
St. Martin	....	....	....	....	....	....	..	....	6	327½	1036½	7
Drummond	....	....	....	....	....	....	..	....	2	167	529	2
Metcalfe	....	....	....	....	....	....	..	....	2	132	417½	2
Canning	....	....	....	....	....	....	..	....	7	368	1165	9
Durocher	....	....	....	....	....	....	..	....	5	351½	1112½	6
Craig	....	....	....	....	....	....	..	....	....	50	158	1
Mansfield	....	....	....	....	....	....	..	....	1	39	123	1
Cemetery	....	....	....	....	....	....	..	....	1	24	76	1
Victoria	....	....	....	....	....	....	..	....	2	95½	302	3
Sherbrooke	....	....	....	....	....	....	..	....	5	259½	1257½	6
Versailles	....	....	....	....	....	....	..	....	2	105	333	2
St. Joseph	....	....	....	....	....	....	..	....	9	401	1269	10
St. Margaret	....	....	....	....	....	....	..	....	2	48	152	2
McGill. Coll. Av.	....	....	....	....	....	....	..	....	1	47	149	1
McTavish	....	....	....	....	....	....	..	....	1	46	146	1
Cathcart	....	....	....	....	....	....	..	....	2	62	197	2
Total	648	1977	2625	1	....	1	2	3	133	7152½	22817	157
St. Lawrence Wd.												
St. Urbain	....	858	858	1	1	1	..	1	12	394	1249	12
Dorchester	....	....	....	....	....	....	..	....	2	92	367	2
St. Alexander	....	....	....	....	....	....	..	....	1	29	92	1
St. Lawrence	....	....	....	....	....	....	..	....	5	297	985½	5
Hermine	....	....	....	....	....	....	..	....	1	14	44	1
Plateau	....	....	....	....	....	....	..	....	2	72	228	2
St. Chs. Barromée	....	....	....	....	....	....	..	....	9	406	1286	13
Mignonne	....	....	....	....	....	....	..	....	1	104	329	1
Bleury	....	....	....	....	....	....	..	....	7	274½	1772	8
Devienne	....	....	....	....	....	....	..	....	2	45	142	1
Vallée	....	....	....	....	....	....	..	....	1	81	256½	1
Carried over	....	858	858	1	1	1	..	1	43	1808½	6751	47

SCHEDULE No. 1—(Continued.)

Names of Streets.	Length in Feet of Cast-Iron Pipes.			Number of Stop Cocks.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
St. Law'nce—*Con.*												
Brought forw'd.		858	858	1	1	1	..	1	43	1808½	6751	47
Vitré	....	......	......	....	....	....	..	....	2	48½	153½	3
Craig	....	......	......	....	....	....	..	....	2	63	200	2
St. Catherine	....	......	......	....	....	....	..	....	2	88	278¼	2
St. George.......	....	......	......	....	....	....	..	....	4	315½	999	5
Sherbrooke	....	......	......	....	....	....	..	....	5	310	982	5
City Councillor..	....	......	......	....	....	....	..	....	1	40¼	128½	2
Lagauchetière ..	....	......	......	....	....	....	..	....	3	101	318	3
Chenneville.....	....	......	......	....	....	....	..	....	2	61½	194	3
St. Philip	....	......	......	....	....	....	..	....	2	219	693	2
Mayor	....	......	......	....	....	....	..	....	1	35	111	1
Total.....	....	858	858	1	1	1	..	1	67	3088	10808½	75
St. Lewis Ward.												
St. Constant.....	....	......	......	....	....	....	..	....	6	368	1165	8
St. Denis	696	13	709	....	....	....	1	1	1	79	250	1
St. Hypolite.....	....	401	401	....	....	....	..	....	4	116	368	4
Bonaparte.......	....	400	400	....	1	1	..	1	3	67½	214	4
St. Lawrence	....	......	......	....	....	....	..	....	15	443½	1405	18
St. Dominique...	....	......	......	....	....	....	..	....	25	868½	3059½	28
Sherbrooke	....	......	......	....	....	....	..	....	6	217	687½	6
St. Elizabeth	....	......	......	....	....	....	..	....	5	427½	1354	5
St. Catherine	....	......	......	....	....	....	..	....	1	154	487	1
Vitré	....	......	......	....	....	....	..	....	2	171	541½	2
Craig	....	......	......	....	....	....	..	....	1	29	92	1
German....... ..	....	......	......	....	....	....	..	....	1	21	66½	1
Courville	....	......	......	....	....	....	..	....	3	177	560½	5
Cadieux	....	......	......	....	....	....	..	....	1	44	139	1
Lagauchetière ..	....	......	......	....	....	....	..	....	1	98	311	1
St. Emery.......	....	......	......	....	....	....	..	....	2	74	234	2
Ontario	....	......	......	....	....	....	..	....	1	11	35	1
Crotée..........	....	......	......	....	....	....	..	....	1	28	89	1
Total.....	696	814	1510	1	1	1	1	2	79	3394	11058½	90
St. James Ward.												
Dubord	....	358	358	....	....	....	..	....	4	114	360½	4
St. Christophe...	....	420	420	....	....	....	..	....	9	474½	1503	12
Lagauchetière...	....	6	6	....	....	....	1	1	1	57	180½	1
St. N. Tollentine.	....	641	641	....	....	....	..	....	34	1536½	4882½	48
Sherbrooke......	12	......	12	....	....	....	..	....		......	......	
Mignonne.......	558	......	858	2	....	2	..	2	7	189	598	7
St. André	....	117	117	....	....	....	..	....	10	633½	2006	11
St. Denis........	693	......	693	1	....	1	..	1	2	159	603	2
Beaudry	....	593	593	....	....	....	..	....	12	551½	1746½	13
Carried over...	1563	2135	3698	3	....	3	1	4	79	3715	11880	98

SCHEDULE No. 1—(Continued.)

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
ST. JAMES—*Con.*												
Brought forw'd.	1563	2135	3698	3	....	3	1	4	79	3715	11880	98
Campeau	....	60	60	....	....	....	..	....	3	54	171	3
Montcalm	....	631	631	....	....	....	..	....	11	346½	1096	12
Wolfe	....	......	......	....	....	....	..	....	3	62½	197½	3
Rousseau	....	......	......	....	....	....	..	....	2	27	86	2
St. Mary	....	......	......	....	....	....	..	....	3	151½	479	4
Napoleon	....	......	......	....	....	....	..	....	1	165	522	2
St. Hubert	....	......	......	....	....	....	..	....	5	206	652½	5
Amherst	....	......	......	....	....	....	..	....	4	238	754	4
Visitation	....	......	......	....	....	....	..	....	5	168	531	6
Ontario	....	......	......	....	....	....	..	....	3	103	326½	4
Berri	....	......	......	....	....	....	..	....	7	279½	888½	8
Craig	....	......	......	....	....	....	..	....	4	209	655	6
Dorchester	....	......	......	....	....	....	..	....	2	72½	229	3
St. Catherine	....	......	......	....	....	....	..	....	1	42	133	1
Labelle	....	......	......	....	....	....	..	....	1	17	54	1
Brock	....	......	......	....	....	....	..	....	3	71	224½	3
Total....	1563	2826	4389	3	....	3	1	4	137	5927½	18879½	165
ST. MARY'S WARD.												
Mignonne	....	331	331	....	....	....	..	....	6	145½	461	7
Parthenais	....	750	750	....	....	....	1	1	2	116½	369	3
Shaw	....	126	126	....	....	....	..	....	1	32	101	1
Ontario	257	......	257	....	....	....	1	1	....	......	......	
Panet	493	......	493	1	....	1	..	....	4	232½	791	6
Durham	....	......	......	....	....	....	..	....	5	198	627	5
Seaton	....	......	......	....	....	....	..	....	6	338½	1072	9
St. Catherine	....	......	......	....	....	....	..	....	3	102½	330	4
Dorchester	....	......	......	....	....	....	..	....	4	147½	466	4
Visitation	....	......	......	....	....	....	..	....	5	265	1051	6
Sydenham	....	......	......	....	....	....	..	....	3	104	329½	5
Voltigeurs	....	......	......	....	....	....	..	....	1	22	69	1
De Salaberry	....	......	......	....	....	....	..	....	2	104	462½	2
Colborne Avenue	....	......	......	....	....	....	..	....	2	56	177	2
Larochelle Lane	....	......	......	....	....	....	..	....	4	148½	471	8
St. Adolphus	....	......	......	....	....	....	..	....	1	35	111	1
Craig	....	......	......	....	....	....	..	....	3	124	508½	3
Fullum	...	......	......	....	....	....	..	....	3	192	776	3
Dufresne	....	......	......	....	....	....	..	....	4	108	346	4
Blake	....	......	......	....	....	....	..	....	1	31½	100	2
Pillar Lane	....	......	......	....	....	....	..	....	1	177	560½	1
Peel	....	......	......	....	....	....	..	....	1	19	60	1
St. Mary	....	......	......	....	....	....	..	....	1	22	69	1
Total....	750	1207	1957	1	....	1	2	3	63	2721	9304	79
GRAND TOTAL....	3712	9040	12752	5	4	9	6	15	602	28426¼	92512	702

SCHEDULE No. 2.—Shewing the Pipes, Hydrants, and Stop Cocks laid down, and the number of Houses supplied with water, in the City of Montreal, up to January, 1865.

NAMES OF WARDS.	LENGTH OF MAIN PIPES IN FEET.								Total Length of Main Pipes.	NUMBER OF STOP COCKS.									HY-DRANTS.		BRICK CHAMBERS.	HOUSES SUPPLIED.
	24 in.	16 inch	12 in.	10 in.	8 inch	6 in.	4 in.	Lead		24 in	16 in	12 in	10 in	8 in	6 in.	4 in.	2½ in	To'l No.	Pri-vate	Pub-lic.		
East	......	....	......	3270	470	5140	6660	380	15920	..	..	..	6	..	6	17	3	32	....	30	59	549
Centre	......	....	......	1272	....	4426	6382	850	12930	..	..	..	1	..	5	16	2	24	2	25	49	393
West	......	630	965	1158	600	4905	8614	430	17302	..	1	2	1	1	7	21	3	36	....	33	66	572
St. Ann's	......	....	6577	1712	620	29795	44139	160	83003	..	..	7	2	1	30	70	1	111	10	97	217	1822
St. Antoine	1060	2020	6818	2478	900	27015	61918	360	102569	2	1	10	4	3	29	85	11	145	....	108	242	2156
St. Lawrence	......	....	......	5562	3250	8627	26569	360	44368	..	..	..	3	3	10	46	5	67	....	56	118	1725
St. Lewis	......	....	......	7917	1620	8592	25389	280	43798	..	..	..	5	1	9	34	5	54	....	61	110	1669
St. James	......	....	......	4778	....	15511	31687½	150	52126½	..	..	..	4	..	16	40	1	61	....	55	115	1538
St. Mary's	......	....	......	5923	....	20508	18745½	215	45391½	..	..	..	6	..	20	29	2	57	4	62	121	1246
	1060	2650	14360	34070	7460	124519	230104	3185	417408	2	2	19	32	9	132	358	33	587	16	527	1097	11670
Rising Main	16887	....	24	......	....	15	....	....	16926	12	1	2	..	..	1	....	..	16	....	....	16	3
Grand Trunk R. R., Pt. St. Charles	......	....	......	......	....	2383	2728	....	5111	..	..	..	..	..	2	3	..	5	10	....	15	......
Montreal City Pass. RR. Co., St. Mary Street	......	....	......	......	....	......	1015	....	1015	..	..	..	..	..	....	1	..	1	1	....	2	......
Military Government at Hochelaga	......	....	......	......	....	......	2180	....	2180	..	..	..	..	..	....	1	..	1	1	....	2	......
Grand Trunk R. R., St. Bonaventure Street	......	....	......	......	....	......	308	....	308	..	..	..	..	..	....	1	..	1	2	....	3	......
Canadian Rubber Co., St. Mary Street	......	....	......	......	....	......	104	....	104	..	..	..	..	..	....	1	..	1	1	....	2	......
TOTAL	17947	2650	14384	34070	7460	126917	236439	3185	443052	14	3	21	32	9	135	365	33	612	31	527	1137	11673

SCHEDULE No. 3.—Shewing the Hydrants and Stop-Cocks renewed in 1864.

LOCATION.	STOP-COCKS.			Hydrants.
	6 in.	4 in.	Total.	
Corner of Montcalm and St. Catherine		1	1	
" St. Peter and Recollet		1	1	
" St. Lawrence and Mignonne..............		1	1	
" St. Constant and Lagauchetiere		2	2	
" Great St. James and McGill		1	1	
" St. Mary and Montcalm...................	1		1	
" Lagauchetiere and St. Ignace.............		1	1	
" St. Patrick and Lacroix....................		1	1	
" St. Antoine and St. Marguerite		1	1	
" St. Maurice................................		1	1	
" Wellington and Congregational				1
" St. Paul and St. Nicholas				1
" Lagauchetiere and St. Hubert				1
" St. Mary and Visitation...................				1
" St. Denis and St. Catherine				1
" William and Inspector				1
	1	10	11	6

SCHEDULE No. 4.—Shewing the Hydrants found frozen, and also those whose Chambers were pumped, during the Winter 1863 and 1864.

By the Rise of Water.		For want of Sewerage.		By Leaks.		By other Causes.		TOTAL.		Hydrant Chambers Pumped.	
No. of Hydrants.	No. of Times	No. of Hydrants.	No. of Times	No. of Hydrants.	No. of Times	No. of Hydrants.	No. of Times	No. of Hydrants.	No. of Times	No. of Hydrants.	No. of Times
18	1	13	1			14	1	45	1	11	1
8	2	5	2	2	2	6	2	21	2	11	2
3	3	3	3			1	3	7	3	12	3
		1	4					1	4	3	4
		2	5			2	5	4	5	4	6
		3	6					3	6		
						2	7	2	7		
		1	8					1	8		
		1	10					1	10		
29	43	29	82	2	4	25	53	85	182	41	105
During 1862 and 1863.											
50	222			15	15	59	185	124	422	36	144

SCHEDULE No. 5.—Shewing the Repairs done to Hydrants, &c.

POSITION.	DATE. 1864.	DIAMETER.	STOP COCKS	HYDRANTS.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF INJURY.
Mill near Peck's Factory.....	Feby 10	6 in.	..	..	1	..	Put in a new piece of pipe.	Split pipe.
Wellington & Congregational.	March 4		..	1	..	..	Replaced by a new one.	By runaway horse.
Wellington, south R. R.......	April 7	12 in.	..	..	..	1	Recaulked the joint.	Heaved by the frost.
St. Edward	" 9	4 in.	..	..	..	1	Do.	Badly made.
Wellington, south of R.R.Tr'ck	" 18	4 in.	..	..	1	..	Put in a new piece of pipe.	Split pipe.
Amherst and Ontario........	" 19	6 in.	..	..	..	1	Put in a new joint.	From settling of filling over new sewer.
Montcalm	" 21	4 in.	..	..	1	..	Put in a new piece of pipe.	Split in driving a nozle for service pipe.
Dubord	" 26	4 in.	..	..	1	..	Do.	Laying across a sewer.
St. Dominique and Dorchester	" 28	4 in.	..	..	1	..	Do.	A hole in the pipe (very old pipe.)
Do. do.	" 30	4 in.	..	..	1	..	Do.	Split pipe (very thin.)
St. Paul and St. Nicholas	" 30		..	1	..	..	Replaced by a new one.	Old hydrant out of order.
Chenneville	May 4	4 in.	..	..	1	..	Put in a new piece of pipe.	A hole in the casting.
Mill	" 11	6 in.	..	..	1	..	Put on a Cap.	Fall of earth in excavation at I. Gould's.
Sherbrooke, ne'r St. Dominique	" 11	10 in.	..	..	..	1	Recaulked the joint.	Badly made.
St. Bonaventure R.R. Depot..	" 11	4 in.	..	..	..	1	Put in a new joint.	Do.
Coté, near Lagauchetiere	" 11	4 in.	..	..	1	..	Put on a cap.	A hole in the casting.
St. Catherine and Peel.......	" 13	24 in.	..	..	..	1	Recaulked the joint.	Badly made.
St. Peter and Recollect	June 1	4 in.	1	..	..	..	Replaced by a new one.	The gate was broken.
Mignonne and St. Lawrence..	" 1	4 in.	1	..	..	..	Do.	Do.
St. Catherine and Montcalm..	" 1	4 in.	1	..	..	..	Do.	Do.
St. Constant & Lagauchetiere.	" 8	4 in.	2	..	..	..	Do. two new ones.	Do.
Great St. James, near McGill.	" 8	4 in.	1	..	..	..	Do.	Do.
Carried over......	....	......	6	2	9	6		

SCHEDULE No. 5.—(*Continued.*)

POSITION.	DATE. 1854.	DIAMETER.	STOP COCKS	HYDRANTS.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF INJURY.
Brought forward......	....	......	6	2	9	6		
St. Mary and Montcalm......	June 8	6 in.	1	..	..	..	Replaced by a new one.	Old one worn out.
Lagauchetiere and St. Ignace.	" 8	4 in.	1	..	..	..	Do.	Broken at the gate.
St. Maurice................	" 8	4 in.	..	..	1	..	Put in a new piece of pipe.	Split pipe.
St. Dominique	" 8	4 in.	..	..	1	..	Do.	A hole in the casting.
St. Patrick and Lacroix......	" 8	4 in.	1	..	..	..	Replaced by a new one.	Broken at the gate.
Place d'Armes Jet d'Eau.....	" 8	3 in.	..	..	1	..	Put in a new piece of pipe.	In Attaching a stop-cock into the pipe.
St. John....................	" 15	4 in.	..	..	..	1	Do.	A hole in the casting.
St. Dominique	" 15	4 in.	..	..	..	1	Do.	Do.
St. Catherine, St. Antoine Ward	" 16	24 in.	..	..	..	1	Recaulked the joint.	Do.
Seaton......................	" 16	4 in.	..	..	..	1	Do.	Badly made.
St. Antoine and St. Margaret.	" 16	4 in.	1	..	..	..	Replaced by a new one.	Broken at the gate.
Craig and St. Denis	" 28	4 in.	..	..	..	1	Put in a new Plug.	An old wooden plug.
Mountain	July 8	12 in.	..	..	..	1	Recaulked the joint.	Badly made.
St. Dominique..............	" 8	4 in.	..	..	..	1	Put in a new piece of pipe.	A hole in the casting.
St. Bonaventure, west end....	" 14	4 in.	..	..	2	..	" 2 pieces "	Thin pipes.
St. Peter and Lemoine.......	" 18	4 in.	..	..	1	..	Put in a new piece of pipe.	Split pipe (very old).
St. Nicholas	" 20	4 in.	..	..	1	..	Do.	Broken in driving in one inch nozle.
St. Nicholas Tollentine......	" 23	4 in.	..	..	1	..	Do.	By parties making a private sewer.
McCord, near Ottawa........	" 26	12 in.	..	..	..	1	Put in a new joint.	Blown out by pressure.
St. Maurice.................	" 26	4 in.	1	..	..	..	Replaced by a new one.	Old one worn out.
St. Dominique	Aug. 1	4 in.	..	..	1	..	Put in a new piece of pipe.	A hole in the casting.
Carried over......	....	......	11	2	18	14		

SCHEDULE No. 5.—(*Continued.*)

POSITION.	DATE. 1864.	DIAMETER.	STOP COCKS	HYDRANTS.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF INJURY.
Brought forward......	....	......	11	2	18	14		
St. Louis	Aug. 1	3 in.	..	..	1	..	Put in a new piece of pipe.	A hole in the casting.
Dorchester, "St. Mary's Ward"	" 15	10 in.	..	..	..	1	Recaulked the joint.	Badly made.
St. Bonaventure.............	" 29	4 in.	..	..	1	..	Put in a new piece of pipe.	By contractors.
Craig, near Visitation	" 31	6 in.	..	..	..	1	Do.	Bad pipe.
Mignonne, at St. Constant ...	Sept. 2	4 in.	..	..	1	..	Do.	Broken across.
Lane off Mignonne..........	" 2	4 in.	..	..	..	1	Recaulked the joint.	Badly made.
Parthenais	" 14	4 in.	..	..	..	1	Do.	Do.
Aylmer	" 21	4 in.	..	..	1	..	Put in a new piece of pipe.	By fall of earth from new sewer.
St. Bonaventure.............	" 21	4 in.	..	..	1	..	Do.	Do.
Mill	" 21	6 in.	..	..	1	..	Do.	By fall of earth from Ira Gould's tail race.
St. Bonaventure.............	" 24	4 in.	..	..	1	..	Do.	Do. new sewer.
McCord, near St. Ann's Church	Oct. 6	12 in.	..	..	..	1	Recaulked the joint.	Heaved by the frost.
Wellington, south of Bridge..	" 7	12 in.	..	..	..	2	Do.	Do.
University and Burnside.....	Sept. 30	4 in.	..	..	2	..	Put on 4 new caps.	By fall of earth from new sewer.
Lane off Mignonne..........	Oct. 19	4 in.	..	..	..	1	Recaulked the joint.	Badly made.
Wellington, south of Bridge..	" 12	12 in.	..	..	..	2	Do.	Heaved by frost.
Sanguinet and St. Emery	Nov. 3	4 in.	..	..	..	1	Do.	Badly made.
Shannon	" 3	4 in.	..	..	..	1	Do.	Do.
Inspector	" 3	4 in.	..	..	..	1	Do.	Do.
Wellington, south of Bridge..	" 8	12 in.	..	..	..	1	Do.	Heaved by the frost.
William, "Douglass Mill"...	" 14	6 in.	..	..	..	1	Do.	Badly made.
Carried over......	....	......	11	2	27	29		

SCHEDULE No. 5.—(*Continued.*)

POSITION.	DATE. 1864.	DIAMETER.	STOP COCKS	HYDRANTS.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF INJURY.
Brought forward......	....	......	11	2	27	29		
St. Christophe	Novr. 14	4 in.	..	..	1	..	Put in a new piece of pipe.	In driving in the nozle for a service pipe, [pipe very thin.
Fullum	" 16	6 in.	..	..	..	1	Recaulked the joint.	Badly made.
McCord	" 18	12 in.	..	..	..	2	Do.	Heaved by the frost.
Campeau and Lagauchetiere..	" 18		..	1	..	..	Do.	Badly made.
Craig and St. George	" 18		..	1	..	..	Do.	Do.
St. Felix, near St. Bonaventure	" 19	4 in.	..	..	..	1	Do.	Do.
Wellington, south of Bridge..	Dec. 6	12 in.	..	..	..	2	Do.	Heaved by the frost
St. Elizabeth and St. Catherine	" 6	4 in.	..	..	..	1	Do.	Badly made.
Commissioners, east end M'rket	" 7	6 in.	..	..	..	1	Do.	Do.
Dorchester and Montcalm ...	" 7	4 in.	..	..	..	1	Do.	Do.
Dorchester, St. Antoine Ward.	" 26	6 in.	..	..	..	1	Do.	The faucet of the pipe not properly made.
Nazareth, near Common	" 30	4 in.	..	..	..	1	Put in a new joint.	Blown out by pressure.
	1865.							
Magdelen	Jan. 11	4 in.	..	..	1	..	Put in a new piece of pipe.	In driving in the nozle for service pipe.
Smith	" 12		..	1	..	..	Put in a new joint.	Blown out by pressure.
			11	5	29	40		

SCHEDULE No. 6.—Shewing the number of Dwelling Houses, Stores and Innkeepers supplied with water by the Montreal Water Works, during the year 1864.

DWELLINGS.

Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.
1870	5.00	12705		13443		13576	
2486	5.75	8	21.50	23	38.75	4	77.75
2238	6.50	74	22.25	1	39.50	1	78.00
1490	7.25	7	23.00	34	40.25	1	82.85
123	8.00	92	23.75	5	41.75	1	85.25
1349	8.75	2	24.50	2	43.25	1	90.00
161	9.50	162	25.25	1	44.00	1	92.00
788	10.25	72	26.75	1	44.75	3	92.75
74	11.00	2	27.50	1	46.25	1	102.00
631	11.75	65	28.25	28	47.75	1	115.25
25	12.50	2	29.00	2	50.00	1	122.75
164	13.25	87	29.75	4	50.75	1	137.75
169	14.00	2	30.50	1	51.50	2	142.00
295	14.75	10	31.25	1	52.25	1	157.50
7	15.50	1	32.00	6	55.25	1	175.00
197	16.25	111	32.75	9	56.75	1	182.00
7	17.00	8	33.50	1	57.50	3	200.00
301	17.75	1	35.00	3	60.00	1	227.75
75	19.25	19	35.75	1	60.50	1	250.00
20	20.00	4	36.50	8	62.75	1	300.00
235	20.75	9	37.25	1	65.75		
12,705		13,443		13,576		13603	

STORES AND OFFICES.

Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.
216	4.00	1826		2097		2203	
214	5.00	8	23.00	1	44.00	2	94.00
367	6.00	9	24.00	1	45.00	6	98.00
136	7.00	6	25.00	7	46.00	4	122.00
91	8.00	72	26.00	2	48.00	4	130.00
90	9.00	5	28.00	31	50.00	1	162.00
170	10.00	3	29.00	1	52.00	1	202.00
24	11.00	28	30.00	9	54.00	1	208.00
69	12.00	7	31.00	9	58.00	2	242.00
21	13.00	3	32.00	1	60.00	1	380.00
128	14.00	4	33.00	7	62.00		
28	15.00	41	34.00	13	66.00		
23	16.00	2	35.00	1	69.00		
36	17.00	4	36.00	2	70.00		
103	18.00	20	38.00	10	74.00		
5	19.00	3	39.00	1	78.00		
16	20.00	2	41.00	6	82.00		
8	21.00	53	42.00	4	90.00		
81	22.00	1	43.00				
1826		2097		2203		2225	

SCHEDULE No. 6—(*Continued.*)

HOTELS AND TAVERNS.

Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.
67	12.00	308		326		336	
77	17.00	1	47.00	2	82 00	2	172.00
75	22.00	9	52.00	3	92.00	2	182.00
28	27.00	5	62.00	2	102.00	1	138.00
29	32.00	1	67.00	1	107.00	1	242.00
11	37.00	1	72.00	1	122.00	1	512.00
21	42.00	1	77.00	1	142.00		
308		326		336		343	

SPECIAL CHARGES.

11	5.00	78		109		138	
2	6.00	2	21.50	1	36.00	1	85.25
6	7.50	1	22.00	3	37.50	2	90.00
1	8.00	1	22.50	6	40.00	2	110.00
1	9.00	5	24.00	3	40.25	1	120.00
9	10.00	6	25.00	1	41.75	2	150.00
8	12.00	3	28.00	3	45.00	1	200.00
20	15.00	9	30.00	5	50.00	1	204.00
3	18.00	1	32.00	2	50.50	1	300.00
15	20.00	1	34.00	3	60.00	1	452.00
1	20.75	1	34.50	1	70.00	2	600.00
1	21.00	1	35.00	1	73.25	1	750.00
						1	3000.00
78		109		138		154	

Horses.		Cows.		Baths.		Water Closets.	
1339	3.00	595	1.00	8	6.00	29	15.00
310	2.00					145	6.00
773	1.50	Horse Power for Steam Engines.		Stalls.		1451	4.00
2422		235	7.00	896	0.50	1625	

RECAPITULATION.

13603	**Dwellings.**	2422	**Horses.**
2225	**Stores.**	595	**Cows.**
343	**Hotels and Taverns.**	235	**Horse Power Engines.**
154	**Factories.**	8	**Baths.**
		896	**Stalls.**

SCHEDULE No. 7.—Shewing the Average Daily Consumption of Water, in Imperial Gallons, for the year 1864, compared with that of 1863.

	Average, 1864.	Average, 1863.	Increase	Decrease	Total Consumption for 1864.
February	3,523,169	3,231,875	291,294		102,171,902
March	3,332,475	3,087,880	244,595		103,306,728
April	4,003,223	3,977,615	25,608		120,096,711
May	3,855,934	4,307,049		451,115	119,533,980
June	4,025,742	4,479,469		454,727	120,772,265
July	4,381,353	4,154,671	226,682		135,820,944
August	4,602,058	4,504,426	97,632		142,663,821
September	4,239,849	4,526,220		286,371	127,195,471
October	4,323,540	4,055,170	268,370		134,029,753
November	3,728,530	3,529,333	199,197		111,855,910
December	4,313,023	3,624,489	688,534		133,703,719
1865.					
January	4,426,068	4,343,153	82,915		137,208,124
	48,754,964	47,821,350	2,127,827	1,192,213	1,488,359,328
Daily Average 1864.	4,062,913	3,985,112	Monthly Av., 1864		124,029,944
" " 1863.	3,985,112		" " 1863		121,354,442
Increase	77,801				2,675,502

SCHEDULE No. 8.—Operations of the Wheel House.

	Revolutions. Wheel No. 1.	Revolutions. Wheel No. 2.	Total No. of Revolutions.	Number of Gallons Pumped.	Olive Oil in Gallons.	Tallow in Lbs.	Coal Oil in Gallons.	Coal for Fuel in Lbs.	Coke for Fuel in Lbs.
February	330956	334659	665615	102171902	9.31	16.08	8.76	17455	......
March	192234	480773	673007	103306728	9.13	15.05	7.55	16900	......
April	270277	512112	782389	120096711	10.20	13.04	6.66	9617	......
May	565800	212923	778723	119533980	11.04	15.11	5.33	3225	......
June	503971	282819	786790	120772265	11.23	13.14	4.33	......	......
July	590515	294312	884827	135820944	12.31	20.09	5.70	......	......
August	540803	388603	929406	142663821	14.80	17.00	5.70	......	......
September	570797	257838	828635	127195471	12.09	23.14	7.59	750	......
October	583082	290076	873158	134029753	11.30	33.12	8.95	4720	......
November	282724	445979	728703	111855910	9.95	25.06	10.94	9956	......
December	307631	563403	871034	133703719	10.93	28.01	11.43	21788	......
1865.									
January	323508	570356	893864	137208124	10.28	26.01	13.93	24420	......
	5062298	4633853	9696151	1488359328	132.57	249.05	96.87	108831	......
Last Year	5284484	4202656	9487140	1456253303	132.10	210.10	89.09	85658	8534

COMPARATIVE SCHEDULE No. 9.—Shewing the average daily Consumption for each month from 1858 to 1864 in the City of Montreal.

DAILY AVERAGE.	1858.	1859.	1860.	1861.	1862.	1863.	1864.
January	2,295,000	3,209,000	3,035,000	3,590,300	4,334,265	3,676,755	4,343,153
February	2,295,000	3,295,000	3,283,000	2,904,760	3,815,390	3,231.875	3,523,169
March	2,295,000	3,225,000	3,238,000	2,695,220	2,279,100	3,087,880	3,332,475
April	2,752,000	3,092,000	3,064,000	2,828,870	3,389,637	3,977.615	4,003,223
May	2,780,000	3,221,000	3,032,000	3,149,628	3,715,171	4,307,049	3,855,934
June	3,001,000	3,638,000	3,251,000	3,020,164	3,786,468	4,479,469	4,025,742
July	2,942,000	3,410,000	3,463,000	3,294,260	3,949,056	4,154,671	4,381,352
August	2,768,000	3,621,000	3,835,000	3,094,612	3,947,433	4,504,426	4,602,058
September	3,026,000	3,065,000	3,417,000	3,611,212	3,738,938	4,526,220	4,239,849
October	2,819,000	3,200,000	3,661,000	3,270,000	3,831,535	4,055,170	4,323,540
November	2,805,000	3,047,000	2,889,000	3,130,980	3,621,323	3,529,333	3,728,530
December	2,900,000	3,117,000	3,250,000	3,254,750	3,748,800	3,624,489	4,213,023
	32,678,000	39,140,000	39,428,000	37,844,756	44,157,116	47,154,952	48,572,049
Daily average for the whole Year.	2,723,166	3,261,666	3,285,666	3,153,729	3,679,759	3,929,579	4,047,670
Increase	......	538,500	24,000	......	526,030	249,820	118,091
Decrease	......	......	......	131,937	......	......	......

SCHEDULE No. 10, shewing the Rain and Evaporation at Reservoir, 1864.

	RAIN GUAGE.				Evaporation in inches.
	Rain.	Snow.	Reduced to Rain.	Total Rain.	
February	0.04	17¼	1.10	1.14	1.15
March	1.19	5¼	0.66	1.85	1.66
April	1.98	6¼	0.80½	2.78½	2.20
May	3.98	....	....	3.98	4.10
June	1.30	....	....	1.30	5.90
July	2.49	....	....	2.49	5.97
August	3.32	....	....	3.32	4.54
September	2.79	....	....	2.79	2.59
October	3.11	....	....	3.11	1.62
November	3.58	7¾	0.75	4.33	1.31
December	0.60	16¾	1.50	2.10	1.12
1865.					
January		17¾	1.28	1.28	1.27
	24.38	71	6.09½	30.47½	33.43
In 1863	28.23	88⅝	8.51	36.74	35.41

STATEMENT of the EXPENSES from 1st of February 1864, to 1st February 1865 :—

		$ cts.	$ cts.
WORKING DEPARTMENT.			
Amount expended on Aqueduct during the Year for alterations of fences, repairs to Banks, Ditches &c		208.30	
WHEEL HOUSE.			
Amount expended in repairs to Machinery, for Fuel Oil, Tallow, and Men's Time		3,841.63	
TAIL RACE.			
Amount expended for repairs	$233.25		
" paid R. Philbin's Balance of Contract	$2000.00		
		2,233.25	
PIPE TRACK.			
Amount expended for repairs		232.87	
McTAVISH STREET RESERVOIR.			
Amount spent in making new Road, Fencing and repairing Banks		1,272.76	
COTEAU BARON RESERVOIR.			
Amount expended on repairs		18.81	
MAINTENANCE OF FIRE HYDRANTS.			
Amount expended for Materials	$ 336.32½		
" " Men's Time	1,011.45		
		1,347 77	
DISTRIBUTION PIPES.			
Amount expended for Materials to repairs.	$1,683.92		
" " Men's Time	3,001.13		
		4,685.05	
PUBLIC FOUNTAINS.			
Amount spent for repairs		104.03	
ADMINISTRATION & SHOP DEPARTMENT.			
Amount spent for Tools & other Materials	$1,974.85		
" " Men's Time	5,644.61		
		7,619.46	
Salaries of Officers		4,475.03	
			26,038.96
EXTENSION OF WHEEL-HOUSE.			
Amount paid Champeau & Dufort		15,720.90	
" " McDougall		19,400.00	
" spent by the Department for Excavation &c.		8,808.53	
			43,929.43
PIPE LAYING.			
Amount spent for Materials & Men's Wages in laying the pipes through the Different Streets of the City		22,882.77	
Amount of Materials on hand Jan'y 1865.	$10,110.62		
" " " 1864.	6,558.07		
		3,552.55	
			26,435.32
			$96,403.71

INVENTORY of STOCK and TOOLS on hand January, 1865.

CAST IRON;

	24in.	16in.	12in.	10in.	8in.	6in.	4in.	3in.
Cast Iron Pipes in feet	276	64	112	140	81	744	1436	192
Four Way Branches	......	......	11	8	5	20	21	......
Three Do.	......	......	7	16	1	7	39	......
Sleaves	1	2	10	7	8	20	3	2
Taper Pipes	......	......	1	4	4	5	7	......
Bends	......	......	......	......	......	2	2	......
Elbows	......	......	......	......	......	2	4	......
Forks	1	......	......	......	......	......	......	......
Caps	......	5	3	3	9	3	5	2
Plugs	......	2	2	6	5	10	9	2
Stop Cocks	3	......	6	5	......	28	22	......

11 New Hydrants.
1 Do. (Imported.)
3 Do. (Water Taps.)
3 4in. old Stop Cocks.

29 Old Hydrants.
3 " Stop Cock covers.
4 " Hydrant Do.

WORK SHOPS, NOTRE DAME STREET.

BRASS WORKS.

Diameter	3 in.	2½ in.	1½ in.	1¼ in.	1 in.	⅝ in.
New Stop Cocks with Couplings	....	....	....	....	88	332
Old Do.	....	....	17	....	95	....
New Elbows with Couplings	....	....	....	....	34	453
Old Do.	....	....	23	....	....	30
Single Joints	....	....	....	....	38	700
Three Way Branches	....	....	....	....	60	204
American Nozles	....	....	....	....	....	48
Hydrant Sludge Cocks	....	....	....	....	....	46
Bed Cocks	....	....	25	20	9	....
1 set Jet d'Eau Fixings	....	....	....	....	....	....

LEAD PIPE AND OTHER LEAD.

2 Bundles of 1¼in. Pipe.
24 do. 1 " do.
28 do. ⅝ " do.
1 do. ½ " do.
1850 lbs. of Pig Lead.

202 lbs. of 1in. Lead Pipe in pieces.
370 " ⅝ " do. do.
10 " Solder.
200 " Old Lead.

TOOLS AND UTENSILS AT SHOPS, NOTRE DAME STREET.

72	Picks.
67	Shovels.
18	Crow Bars.
6	Sledges.
2	Hand Barrows.
4	Hand Saws.
4	Axes.
2	Framing Chisels.
11	Cast Steel Drills.
2	Hoisting Gins.
3	Sets of Blocks.
1	Set of Rope for Tackles.
3	Tool Carts.
3	Wrapping Chains.
1	Cable Chain.
9	Buckets.
2	Grind Stones.
1	Square Shovel.
2	Boxes of Pipe Layer's Tools.
45	Wooden Shovels.
10	Wheel Barrows.
8	Cribbs.
6	Hand Hammers.
2	Drill Frames.
9	Ratchet Braces.
3	Iron Pumps.
3	4-inch Square Wooden Pumps.
2	Ladles.
1	Skimmer.
6	Pots for Pipe Layers.
1	Spirit Level.
1	Force Pump.
4	Hand Bells.
33	Valve Keys (assorted.)
7	Stop Cock Keys (assorted.)
7	Hydrant Keys.
1	Pair Twin Sleighs.
1	Steam Boiler.
2	Small Sleighs.
2	Deck Scrapers.
5	Augers (assorted.)
5	Chisels.
8	Screw Wrenches.
20	Iron do.
3	Hand Braces.
11	Dozens of Handles for Picks, Rammers, &c.
70	feet of ⅝-in. Ind. Rubber Hose.
75	Colored Lamps.
10	Coal Oil Lamps.
8	Drill Frames.
3	Oil Cans.
1	Platform Scale.
1	Balance Scale.
1	Clock.
2	Pairs Long Boots.
17	Tin Lanterns.
2	Steam Guages.
1	Boiler for Stove.
2	Square Stoves.
1	Fire Engine Pump.
2	Sets of Rope Gaskets.
1	do. India Rubber.
51	Hand Spikes.
30	Birch Brooms.
1	Scoop Shovel.
3	Carpenter's Tools.
1	Vice.
2	Wood Saws.
1	Turning Lathe.
2	Wooden Beetles.
1	Adz.
1	Circular Saw.
16	Rammers.
2	Joint Machines.
2	Sets of Augers for Plates.

BLACKSMITH'S TOOLS.

1	Anvil.
1	Beck Horn.
2	Vices.
3	Drill Frames.
40	Pairs Tongs.
29	Heading Tools.
40	Swedges.
82	Mandrills and Punches.
1	Bellows.
1	Portable Forge.
4	Braces.
48	Screw Plates and Taps.
1	Box of small Tools
1	Finishing Block and Plate.
1	Grind Stone.
1	Copper Stamp.
6	Hand Hammers.
1	Sledge.
1	Riveting Hammer.
6	Cold Chisels.
1	Boring Machine.
1	Set Stamp (alphabet & figures.)

TOOLS AND UTENSILS—(*Continued*).

WATER METERS.

2 2½-inch Kennedy's.
2 ⅝ " do. (1 damaged.)
1 ½ " do.
2 1 " Worthington's.
1 ⅝ " do.
1 ⅝ " Aubin's.

PATTERNS.

1 Set of Patterns & Core Boxes for 1″ Stop Cocks.
1 do. do. for 1″ Elbows.
1 do. do. for ⅝″ do.
1 do. do. for ⅝″ Stop Cocks.
1 do. do. for 1″ Three ways
1 do. do. for ⅝″ do.
1 do. do. for 1″ Joints.
1 do. do. for ⅝″ do.

SUNDRIES.

200 lbs. of Iron Bars.
50 " Jute Packing.
20 " Halter Rope.
40 " Iron Straps.
2 American Hydrant Handles.
60 lbs. of Pressed Spikes 6inches.
250 " Cut Nails.
8 Gallons Lamp Oil.
15 Lengths of Stove Pipe.
1 Elbow.
200 Boxes for Services.
Lumber for 1000 Boxes.
6 Cedar Pots for Hydrants.
2 Chaldrons of Smith Coal.
1000 Rings for Boxes.
10 lbs. of Nuts.
6 Barrels Cement.
50 lbs of Zinc.
100 " Wrought Iron.
3 tons Scrap Iron.

AT WHEEL HOUSE.

29 fathoms 1¾in. Manilla Rope.
18 do 3 " "
5 Lifting Chains.
2 Snatch Blocks.
2 Four Sheaved.
4 Three do. with folds.
50 Fathoms of 3½ in. Rope.
14 Oil Cans.
62 Lengths of 7in. Stove Pipes.
11 7inch Elbows.
1 7inch T
35 Lengths of 9in. Stove Pipes.
3 Elbows 9inch Stove Pipes.
4 Small Globe Lamps.
2 Globe Lanterns.
5 Old Lamps.
6 Large Coal Oil Lanterns.
4 Square Coal Oil Lamps.
3 Wall Lamps.
14 Lamp Chimneys.
4 Large Scrubbing Brushes.
4 Corn Brooms.
1 Spirit Level.
4 Glass Tubes for Air Vessels.
2 Wood Chisels.
1 ⅝inch Auger.
1 Old head Strap off Pump.
4 Screw Plates.
1 Stock & Die and 2 Sets of Dies
9 Taps.
3 Tap Wrenches.
5 Rymer Handles.
3 Wrenches for Wheel Buckets.
2 Key Tap Wrenches.
2 Sets of new Pump Buckets.
1 Swan neck.
5 Punches and Dies.
3 Crank Handles for Valves.
3 Riveting Hammers.
5 Ring Bolts.
2 Ratchet Braces.
2 Key Protectors.
4 Steel Jumpers.
6 Hand Hammers.
2 Roping Irons.
1 Tool Box.
5 Caulking Irons.
1 Square Steel Drift.
1 2½in. Key Driver.
2 Eye Lifting Bolts.
3 Boss Head Keys.
1 2½in. Branch for Small Hose.
1 Tin Grease Box.
1 Iron Tallow Barrel.
2 Tin Drainers.
3 Tin Drinking Cups.
4 Tin Candle Sticks.
3 Brushes.
34 Wrenches.

TOOLS AND UTENSILS—(*Continued*).

3	Cast Steel Drivers.
1	Pair Pincher.
2	" Callopers.
1	" Shears.
7	Steel Caulking Irons.
1	Rooping Tool.
6	Hand Punches.
1	Crank Brace and 18 Bits.
4	Cross Cut Cold Chisels.
4	Chipping do.
5	Brass Cocks for Air Vessels.
5	D'ble Couplings, Small Hose.
7	⅝in. Brass Oil Taps.
1	lb. Galvanized Tacks.
1	Small Saw for Cutting Iron.
19	Files.
1	Hand Saw.
3	Wood Chisels.
3	Planes.
1	Square.
8	Augers.
1	Adz.
1	Broad Axe.
1	Vice.
1	Carpenter's Sett Stone.
2	Crank Brasses.
1	Pair Fairbank's Scales with weights.
1	Coal Seive.
4	Settees.
1	Eight Day Clock.
1	Spy Glass.
2	Desks.
2	Revolution Counters.
1	Gauge.
1	Bunk and Buffalo Robe.
4	Coal Stoves.
1	Wooden Slush Pump.
2	4 inch Iron do.
2	Boxwood Measures.
1	Crow Bar.
1	Carpenter Brace and Bitt.
6	Iron Rakes.
1	Iron Bar (80 lbs.)
2	Copper Hammers.
6	Wooden Shovels.
2	Sledge Hammers.
1	Ice Chisel.
1	2 feet Grind Stone and Frame.
125	" India Rubber Hose.
1	4in. Square Cross head Key.
1	Crab Winch with Cranks.
1	Shaft, Pinion, &c., for starting Wheels.
2	Thermometers.
1	Cast Iron Cutting Plate.
1	Bucket Drawer.
2	Ladders.
3	Lifting Chains.
1	Cupboard.
2	Iron Puddle Pounders.
2	Cross Head Keys.
2	pairs of Scissors.
30	Picks.
37	Shovels.
4	Large Lead Pots.
2	Lead Ladles.
1	Box Pipe Layer's Tools.
1	Outside Double Window.
1	" Door.
8	Peck Poles.
1	10 feet Rule.
1	Drawing table and 2 Trestles.
1	Lignum Vitae for new Wheel.
1	Pattern of Girder.
95	feet of Lightning Rod.
1	Pattern of Segment of Wheel.
1	do. Sluice Gate.
2	do. Pillow Blocks.
1	do. Cover Valve Chest.
2	do. Girders.
1	do. Bridge Bracket.
1	do. Pinion.
2	do. Large Bevel Pinion.
1	do. Girder.
1	do. Guide for Sluice Gates.
1	do. Crank Brass.
1	Slush Pump Plunger.
1	Crab Winch.
6	Segments of Large Wheel.
1	Pinion for Large Wheel.
1	Wr't Iron Machine for joints.
3	24-in. Slip Socket.
1	Hydraulic Press.
10	Braces for Buckets of Wheel.
8	Crank Handles.
9	Straps for 24-in. Pipes.
2	Pump Spouts.
7	Side Plates of Wheel.
1	Segment of Centre of Wheel.
6	Wheel Barrows.
1	Lot of Rivets.
2	4-in. Elbow Pipes.

TOOLS AND UTENSILS—(*Continued*).

1 Column 9 feet long.
1 Seive.
1 Box of Wr't Iron Bolts, Nut, &c.
1 Bellows.
1 Vice.
1 Anvil.
2 Socket Hooks.
1 Crank Brace and Frame.
4 Bolt Tools.
9 pairs Blacksmith Tongs.
8 " Bottom Swedges.
3 Sets.
6 Wooden Buckets.
1 pairs of Stairs.
3 Windows.
2 Knapping Hammers.
6 Old Brasses.
1 Spare Brass follower for Pumps
7 Bolts and Nuts.
4 Spare Arms of Wheels.
8 Bearings, Cranks & Pinions of Gate Lifting Apparatus.
1 Hand Truck.
1 Four Wheeled Iron Truck.
1 Wedge Cutting Machine.
1 Heavy Gin for lowering Pipes.
39¾ Teeth for Spur Wheel.
9½ do. Bevel Wheel.

SUNDRIES.

65 lbs. Packing Rope.
50 " Tow.
150 " Tallow.
15 gallons Coal Oil.
12 " Olive Oil.
15 " Lubricating Oil.
15 lbs. Tallow Candles.
45 tons Coal.
30 lbs. Red Lead.
18 " Sole Leather.
40 " Letherage.
7 " Lamp Black.
4 " Flour of Sulphur.
12 " Wire.
7 " India Rubber.
6 Dozen 1-in. Washers.
3 lbs. of Bolts, Nuts, &c.
90 feet of 6-in. Earthenware Pipe.
40 feet 3-in. Planks.
1 Barrel Cement.
3 cwts. of Old Cast Iron.
357 feet of Flatted Tamarack.
769½ " Hemlock.

AT RESERVOIR.

8 Crow Bars.
2 Picks.
2 Iron Shovels.
1 Iron Pounder.
1 Wooden do.
2 Stoves.
1 Glass Lamp.
1 Screw Wrench.
2 Oil Cans.
1 Gun.
3 Thermometers.
1 Rain Gauge.
1 Snow Gauge.
1 Evaporation Guage.
2 Wooden Shovels.
2 Cold Chisels.

AT GATE ON AQUEDUCT.

1 Iron Shovel.
1 Axe.
2 Wooden Shovels.
1 Cold Chisel.
1 Iron Rake.
1 Wire Basket.
1 Glass Lamp.
1 Thermometer.
1 Wheel Barrow.
2 Scythes and 3 Snaiths.

AT ENTRANCE OF AQUEDUCT.

5 Crow Bars.
12 Iron Tubes for Blasting.
1 Grabbing Tool.
3 Peck Poles.
60 Yards of Rope.
4 Iron Chains.
1 Cold Chisel.
1 Sounding Lead.

7

ANNUAL REPORT

OF THE

SUPERINTENDENT

OF

THE MONTREAL WATER WORKS,

FOR THE

YEAR ENDING 31st JANUARY, 1866.

Printed by Order of the Water Committee.

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1901

ANNUAL REPORT.

To the Chairman and Members
Of the Water Committee.

GENTLEMEN,—

I herewith submit my Annual Report, which has been unavoidably delayed up to this date on account of the special report hereunto attached.

AQUEDUCT.

No repair of any importance has been done this year on the Aqueduct. The fences have been examined and repaired, the side ditches cleaned, but nothing was done to the farm bridges, nor to the approaches, as recommended in my last year's Report. This delay, however, has not, so far, proved very injurious to the works, but it gives them the appearance of having been neglected. It might be left so for another year yet, with the exception, however, of some of the banks of the Aqueduct, which will require to be repaired this summer. One of the gates at the Rock Cut having been put out of order by a piece of timber, had so jammed the door that Divers had to be employed to put it right.

This winter the difficulties experienced by the ice on the Aqueduct have been very great, and perhaps the greatest ever experienced. As already stated in previous Reports the Aqueduct in winter is rendered quite insufficient to supply the present wants of the City. I have, in a Special Report to your Committee upon these difficulties, given all the facts concerning them.

The amount expended in repairs to fences, ditches, masonry, &c.:

Men's Wages	$175.65
Materials	120.13
	$295.78

WHEEL-HOUSE.

The Breast Wheels and Pumps are nearly in the same state they were in last year. The two air vessels are still leaking. On the 26th of April last the air vessel of Wheel No. 1 got so bad that two strong iron bands had to be put round the bottom so as to prevent its further splitting. Two new bottoms for these air vessels have been ordered, and will be ready to be put in during the course of the summer.

Last spring, when the water was drawn out of the Aqueduct, the wooden racks of the Breast Wheels were found considerably decayed and giving way—they were replaced by iron ones similar to those of the Turbine Wheel.

In September last, cracks were observed upon the two crank shafts, which threatened to become very serious by breaking down entirely, and thereby endangering greatly the water supply of the City. These crank shafts being of cast iron, it was for that reason difficult to foresee when they should give way entirely. Under these circumstances, and after taking the advice of one of our best mechanical engineers, two new wrought iron crank shafts, nearly as heavy as the present ones were ordered from Wm. Fairbairn & Co., of Manchester, England. These shafts are expected in Montreal early this summer.

While these alterations to the Breast Wheels are being carried on, I would recommend that the working gear of the Water-Wheel Gates be altered, and that two additional blow-off balanced valves be placed to each air vessel, so as to bring the working of the gates and of these blow-off valves under the control of one man in starting or in stopping the wheels.

At present, when the two breast wheels are at work, three men are required to start them, and have to be always on hand should it be found necessary to stop the wheels unexpectedly.

I have prepared a plan and estimate for these alterations.

The new Turbine Wheel was put into operation in June last; but after working a few days it was stopped in order to make a few alterations.

The speed of the pumps was also reduced from 12 to 10 strokes per minute so as to prevent the shock of the pump valves which were beating rather heavily.

This reduces the pumping power of the Turbine to three and a-half millions of gallons per twenty-four hours, instead of four millions, as calculated; but as a double set of valves was recommended in the specifications of the Engineer, and were, by an error in the quantities, excluded from the contract, I would recommend that this spare set of valves, made upon a different plan, be ordered at once. There is reason to believe that these valves so altered will allow the pumps to be worked at a greater speed, and, consequently, obtain the full quantity of water as calculated.

One of the foundation walls of the new machinery which was shaking has been made secure by iron rods and plates, with suitable nuts and washers. Two new pillow blocks have also been ordered to replace the present ones, which are not giving proper satisfaction, inasmuch that they are not so constructed as to tighten the brass bearings as they wear out. These alterations and additions took the best part of last summer, and the Turbine was not fairly set at work until December last, and has worked all right since with satisfaction. During this last winter, the water of the Aqueduct having been so low, that the breast wheels had to be stopped, and the supply of the City was reduced to what could be pumped by the Turbine, which, as expected, proved to possess a greater advantage over the breast wheels in these peculiar circumstances, by being able to be worked with a lower head of water.

The only work done to the Wheel-House was the painting of the new roof. The old building is still in the same condition it was last year.

The old roof is leaking in several places, and lets the water into the building, so that the wood work will soon be rotted by it. It should be renewed and put like that of the new building. The floor of the old building is rotten in several places.

The roof of the new Store was also painted like that of the new Wheel-House; this painting was resorted to on account of the tin covering which was getting oxidised very fast.

The archway over the double rising main was begun early last spring, and was nearly completed during the summer. There is, however, a little more earthwork and sodding to be done. This could not be finished last fall—the appropriations for that object having been exhausted. This bank should be completed during the course of next summer and the sodding put on.

The Engineers Dwellings are getting very dilapidated, notwithstanding all the repairs that are made every year. These Dwellings should be rebuilt and made in a more substantial manner, so that they will not require so frequent repairs, and that they may compare favorably with the other buildings.

The amount expended on Wheel-House and Machinery during the year is as follows:—

Men's Wages	$370.07½
Repairs to Machinery and Wheel-House	796.98
Fuel, Oil, Cotton Waste, &c.	1007.07
	$2174.12½

Expended on the Extension of Wheel-House:—

Men's Wages for digging and forming bank of archway over Rising Main	$1786.85
Champeau & Dufort's balance of contract for the building	3732.36
D. Dufort's contract for archway over Rising Main	4148.50
J. McDougall's balance of contract on Machinery	12249.13
Sundries	847.23
	$22764.07

TAIL RACE.

Nothing of any importance was done to the Tail Race during the year; only a few repairs to fences and banks.

The amount expended is as follows:—

Wages	$ 261.35
R. Philbin's balance of contract	1455.93
	$1717.28

PIPE TRACK.

Some repairs to fences, and one break in the Rising Main have taken place during the year. The part of the track adjoing Hon. F. A. Quesnel's property is still in the same condition it was last year. Something has soon to be done in order to settle the claims of the Hon. F. A. Quesnel against the Corporation. The contract for the 24" Pipes to complete the double Rising Main from Dorchester Street to McTavish Street Reservoir has been awarded to Messrs. D. Y. Stewart & Co., of Glasgow, Scotland. The pipes are to be delivered during the course of next summer. Preparations have now to be made for the laying of these pipes. The amount expended on the Pipe Track during the year 1865, is as follows: $59.42½.

RESERVOIR.

The McTavish Street Reservoir is in good condition with the exception of the roof of the valve house, which requires to be renewed, the timber work being all rotten.

Some repairs have been done to the house and shed of the guardian. A new drain from that shed to the main sewer of McTavish Street has also been laid.

Several of the trees bordering the road round the reservoir have also been renewed.

The extension of this reservoir is progressing; about 2,400 toises of stone have been quarried out during the year for road purposes.

The expenses incurred at that place during the year are as follows :—

Wages	$62.00
Fuel and Oil	92.50
Sundries	42.30
	$196.80

The Coteau Baron Reservoir is in the same condition it was last year. The Keeper's house is in a very bad condition and requires repairs.

PIPE LAYING.

There has been laid during the Summer, 1865, 1,455 feet of 6 inch and 4,144 feet of 4 inch, Cast Iron Pipes, 3 six inch, and 2 four inch Stop Cocks 4 Fire Hydrants. There has been also 428 new houses supplied with water. Schedule No. 1 shews the streets and wards in which the work has been performed. Schedule No. 2 shews the total length of main pipes, the number of Stop Cocks, Fire Hydrants and Services laid in the City up to January, 1866, it is as follows:—17,947 lineal feet of 24 inch, 2,650 of 16 inch, 14,384 of 12 inch, 34,070 of 10 inch, 7,460 of 8 inch, 128,372 of 6 inch, and 240,583 of 4 inch Cast Iron water main Pipes, with 3,185 feet of lead main pipe; forming a total length of 448,651 lineal feet, or nearly85 miles.

There are now laid 14 twenty-four inch, 3 sixteen inch, 21 twelve inch, 32 ten inch, 10 eight inch, 138 six inch, 367 four inch, and 33 two and a half inch Stop Cocks forming a total of 617 Stop Cocks.

The total number of Hydrants is 531.

The total number of houses supplied with water is 12,101.

The main pipes are now laid in most all the inhabited streets of the City, but as the City increases rapidly every year and new streets are opened and old ones extended, 200 tons of 6 and 4 inch pipes have been ordered from Scotland for the purpose of providing with water those who may require it.

Several of the old pipes also require renewal soon, principally the main through Great St. James, St. Peter and St. Sacrament Streets which are only 4 inches in diameter, and that of St. Francois Xavier Street which is only 6 inches diameter. These pipes, which have been laid for many years, and which were then judged of sufficient diameter, are now so much corroded that their diameter is very much reduced and are insufficient to insure the required protection against fires to the extensive buildings that have been erected since.

I would therefore recommend that a 10 inch main connected with the 16 inch main of McGill Street be laid through St. James, St. Peter, St. Sacrament and St. Francois Xavier Streets, connecting with St. Paul Street main. The total length will be as follows, viz.:—

St. James Street	10" Pipe	1,625	lineal feet.
St. Francois Xavier Street	"	910	"
St. Peter Street	"	900	"
St. Sacrament Street	"	590	"
		4,025	"

The expenditure on Pipe laying during the year has been as follows :—

Men's Wages laying Pipes		$5011.55½
Sundry Materials	$2803.77	
Thos. Redmond on account of contract	900.00	
R. Mitchell & Co., for Brass Work	547.09	
James Robertson, for Lead Pipe	3275.07	
	$7525.93	
Less Materials charged to Service and Main Pipe Repairs	3008.77	
		4517.16
		$9528.72

REPAIRS TO MAIN AND SERVICE PIPES.

The repairs done to Main Pipes are shewn in schedule No. 5. There has been 14 breaks and 21 leaks, making in all 35. There has been also 5 stop-cocks and 5 hydrants repaired. This, compared with those of the year previous, shews a decrease of 15 breaks, 19 leaks and 6 stop-cocks repaired.

The amount expended this year for repairs to Main Pipes and Services has exceeded that of last year, although there is a diminution in the leaks and breaks of the Main Pipes. This is principally due to the greater number of frozen pipes, and to the enlargement of the streets, which caused a greater number of men and a larger quantity of material to be employed in repairing or lengthening the Service Pipes.

Last winter the plumbers have been called out for frozen pipes 680 times; 334 times the pipes were found frozen by the neglect of the tenants in not keeping their cellars warm, and in several cases the pipes had been bursted by the frost in the foundation wall of the premises and had to be excavated on the foothpath at a great cost.

The cost of repairs to Main Pipes and Services is as follows:—

Wages on Service Pipes Repairs	$1,826.83	
Do. Main " "	1,376.66	
Do. Footpaths & Service Plates	955.55	
Do. at Work Shops	1,833.00	
		5,992.04
Materials, Tools, Iron, Lead and Brass Works		3,695.06½
		$9,687.11

HYDRANTS.

The keeping of the Hydrants in repairs and ready for fire purposes during last year has cost the Department the sum of $1,143.29 for Wages, and $73.56 for Materials making a total of $1,216.85.

The greater part of this expense is incurred in winter to keep the Hydrants from freezing, by pumping their wells where there is no drainage, and by daily visiting each Hydrants during the cold weather; and whenever any of them are found frozen they are thawed by steam.

Schedule No. 4 shews that during the winter 1864 and 1865, 102 Hydrants have been found frozen 211 times, while the winter previous the number was a great deal less. No other cause for this increase of casualities can be found then the state of the temperature which is not alike every winter.

Amount expended in keeping Hydrants in order:

Men's Wages	$1,123.49
Materials	73.56
	$1,197.05

PUBLIC FOUNTAINS.

The Basins of the Fountains of Viger, Victoria, Richmond, Custom-House and Jacques Cartier Squares have all been repaired. All these Fountains are yet in good order, but their Basins have to be cemented every year in order to repair the damage done by the frost. Those of Viger Square are still in the same condition they were last year.

The expenses incurred for that purpose during the year amount to $53.72.

CONSUMPTION OF WATER.

The average daily consumption during the year has been 4,238,590 gallons, as shewn by schedule No. 7. In this average is included 20,514,608 gallons used for watering the streets, and 1,273,600 gallons for flooding rinks and sewers. This, compared with the previous year, shews an increase of 175,590 gallons per day.

The average daily consumption for each month of the year since 1858 is shewn in schedule No. 10.

In July last experiments were made on two different occasions to test the consumption of water at every half-hour of the day. Schedule No. 6 shews the result of these experiments.

In the first experiment, the highest consumption took place at 9.30 o'clock A.M., and was at the rate of 6,946,000 imperial gallons per day, and the lowest took place at 1.30 o'clock A.M., and was at the rate of 2,903,808 gallons per day.

In the second experiment the highest consumption took place at 10 o'clock A.M., and was at the rate of 4,635,216 gallons per day, and the lowest at 3.30 o'clock A.M., and was 2,671,584 gallons per day.

This shews conclusively that at least 2 millions gallons of water of the daily supply is absorbed by leakage or wasted in the sewers of the City. I have every year alluded to this waste of water in order to induce more and more the Citizens to be careful and to be vigilant in checking any abuse of this most necessary element.

The difficulties experienced in winter in procuring the supply are increasing every year, and measures should be immediately adopted to remove those difficulties.

MANAGEMENT.

The working expenses as per schedule No. 12 amount to $28,166.51.

Every effort has been made to reduce as much as possible the expenditure of the management, but the expensive system of collection, the difficulties caused by the frost in winter, the keeping in order of the Fire Hydrants (which work should by right be done by the Fire Department), the repairs to service boxes and plates occasioned by the frequent renewal of the wooden footpaths are all items which figure for a large amount of the expenditure, as can be seen by referring at schedule No. 12. Every effort is still being made this year to curtail the expenditure as much as possible.

I have to report favorably on the good conduct, assiduity and energy of all the employes under my control, and to them are due my sincere thanks.

I have the honor to be,
Gentlemen,
Your most obedient servant,
LOUIS LESAGE,
Superintendent of Water Works.

MONTREAL, *April 23rd*, 1866.

APPENDIX.

SCHEDULE No. 1.—Showing the Pipes, Hydrants, Stop-Cocks, Services, &c., laid down in the City Montreal during the Year 1865 :—

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
EAST WARD.												
Notre Dame.....	....	......	......	....	....	....	..	....	11	522	1653½	19
Jacques Cartier S.	....	......	......	....	....	....	..	....	2	37	117½	2
St. Claude.......	....	......	......	....	....	....	..	....	1	34½	109	2
Total......	....	......	......	....	....	....	..	....	14	593½	1880	23
CENTRE WARD.												
Notre Dame.....	....	......	......	....	....	....	..	....	1	79	251	4
St. Sulpice.......	....	......	......	....	....	....	..	....	2	58	183	2
St. Frs. Xavier ..	....	......	......	....	....	....	..	....	1	29½	93½	2
Place d'Armes...	....	......	......	....	....	....	..	....	2	33	105	2
Commissioners ..	....	......	......	....	....	....	..	....	1	20	63	1
St. Paul.........	....	......	......	....	....	....	..	....	1	21	64	1
Craig	....	......	......	....	....	....	..	....	1	53½	170	2
Total......	....	......	......	....	....	....	..	....	9	294	929½	14
WEST WARD.												
Hospital........	....	......	......	....	....	....	..	....	2	40	127	2
St. John	....	......	......	....	....	....	..	....	2	42	133	2
Caillieres	....	......	......	....	....	....	..	....	1	17	54	1
Victoria Square..	....	......	......	....	....	....	..	....	....	6	19	....
Great St. James..	....	......	......	....	....	....	..	....	2	145	769	3
Notre Dame.....	....	......	......	....	....	....	..	....	....	65	206	4
St. Alexis.......	....	......	......	....	....	....	..	....	2	30	95	2
St. Peter	....	......	......	....	....	....	..	....	2	56½	179	3
St. Helen	....	......	......	....	....	....	..	....	1	28	89	1
Total......	....	......	......	....	....	....	..	....	12	429½	1671	18

SCHEDULE No. 1.—(Continued.)

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
ST. ANN'S WARD.												
Congregational	....	......	......	1	....	1	...	1	3	147½	467	4
Dalhousie	....	......	......	....	....	....	1	1	8	311	985	14
Ottawa	....	......	......	....	....	....	1	1	4	193½	612½	5
Forfar	1039	893	1932	1	....	1	1	2	20	1158½	3720	27
Olier	....	105	105	....	....	....	..	....	....	......	......	....
St. Joseph	....	......	......	....	....	....	..	....	3	98½	421	4
Seigneurs	....	......	......	....	....	....	..	....	8	440½	1389	12
Magdelen	....	......	......	....	....	....	..	....	4	202	639	4
St. Francis	....	......	......	....	....	....	..	....	3	140	443	3
Richardson	....	......	......	....	....	....	..	....	3	110	348	3
St. Etienne	....	......	......	....	....	....	..	....	2	84	266	2
Centre	....	......	......	....	....	....	..	....	2	80	253	2
Prince	....	......	......	....	....	....	..	....	1	23	73	1
Richmond	....	......	......	....	....	....	..	....	....	77	244	....
Murray	....	......	......	....	....	....	..	....	3	68	215	3
King	....	......	......	....	....	....	..	....	4	156	494	6
Wellington	....	......	......	....	....	....	..	....	3	133	421	3
St. Gabriel Locks.	....	......	......	....	....	....	..	....	....	59	187	....
Basin	....	......	......	....	....	....	..	....	1	93	295	1
Condé	....	......	......	....	....	....	..	....	1	25	79	1
William	....	......	......	....	....	....	..	....	3	155	491	3
Common	....	......	......	....	....	....	..	....	1	25	79	1
St. Maurice	....	......	......	....	....	....	..	....	3	127½	405	4
McCord	....	......	......	....	....	....	..	....	2	69½	220½	4
Kempt	....	......	......	....	....	....	..	....	3	209	662	3
Mill	....	......	......	....	....	....	..	....	1	31	98	1
Manufactures	....	......	......	....	....	....	..	....	1	27	86	1
Barré	....	......	......	....	....	....	..	....	1	110	348	1
Total	1039	998	2037	2	....	2	3	5	89	4353½	13941	113
ST. ANTOINE WARD												
St. Bonaventure	....	392	392	....	....	....	..	....	11	649	2053	13
St. Michael Lane.	....	250	250	....	1	1	..	1	3	35½	112	4
Richmond	....	166	166	....	....	....	..	....	3	95½	303	4
Lane off Aqueduct	....	64	64	....	....	....	..	....	8	325	1082	7
Delisle	....	167	167	....	....	....	..	....	5	182	575	8
Craig	....	325	325	....	1	1	..	1	7	228	723	7
St. Catherine	....	406	406	....	....	....	..	....	8	448	1418½	10
Seigneurs	....	......	......	....	....	....	..	....	10	470	1489½	13
Chatham	....	......	......	....	....	....	..	....	7	265½	939½	7
Latour	....	......	......	....	....	....	..	....	1	38	120	1
Dorchester	....	......	......	....	....	....	..	....	3	192	609	2
St. Frs de Salles.	....	......	......	....	....	....	..	....	1	17	54	1
Roy Lane	....	......	......	....	....	....	..	....	1	11	35	1
Carried over	....	1770	1770	....	2	2	..	2	68	2956½	951[illegible]	78

SCHEDULE No. 1.—(Continued.)

Names of Streets.	Length in Feet of Cast-Iron Pipes.			Number of Stop Cocks.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
St. Antoine—*Con.*												
Brought forw'd.	....	1770	1770	....	2	2	..	2	68	2956½	9513½	78
St. Antoine	....	......	......	....	....	....	..	....	3	254	880	3
Mountain	....	......	......	....	....	....	..	....	5	226	716	5
St. Margaret	....	......	......	....	....	....	..	....	1	70	222	1
University	....	......	......	....	....	....	...	....	5	250½	794	6
Cemetery	....	......	......	....	....	....	..	....	2	58	184	2
Fulford..........	....	......	......	....	....	....	..	....	1	45	143	1
Cathcart	....	......	......	....	....	....	..	....	2	42	133	2
St. Martin........	....	......	......	....	....	....	..	....	2	215½	682	2
Workman.........	....	......	......	....	....	....	..	....	....	9	28	1
St. David	....	......	......	....	....	....	..	....	2	76	241	4
Lusignan	....	......	......	....	....	....	..	....	1	30½	97	2
Canning	....	......	......	....	....	....	..	....	1	17	54	1
Versailles........	....	......	......	....	....	....	..	....	1	26	82	1
Guy	....	......	......	....	....	....	..	....	1	103	481	1
Rolland..........	....	......	......	....	....	....	..	....	1	27	86	1
Union Avenue...	....	.....	......	....	....	....	..	....	6	387	1216	6
Total......	....	1770	1770	....	2	2	..	2	102	4790	15552½	117
St. Lawrence Wd.												
De Bleury	416	......	416	1	....	1	..	....	12	433½	1373½	13
Evans Lane.....	....	146	146	....	....	....	..	....	1	82	260	1
St. Catherine....	....	......	......	....	....	....	..	....	3	142½	452	4
St. Urbain	....	......	......	....	....	....	..	....	7	376	1192	9
St. George	....	......	......	....	....	....	..	....	10	614	2221½	10
St. Chs. Barromée	....	......	......	....	....	....	..	....	3	178	563	3
St. Phillipe	....	......	......	....	....	....	..	....	14	345½	1094½	15
St. Lawrence	....	......	......	....	....	....	..	....	4	115	364	4
St. Bernard......	....	......	......	....	....	....	..	....	1	81	257	1
Jurors	....	......	......	....	....	....	..	....	....	44	140	....
Hermine	....	......	......	....	....	....	..	....	1	15	47	1
St. Famille......	....	......	......	....	....	....	..	....	2	99½	315	3
St. Alexander....	....	......	......	....	....	....	..	....	1	32	101	1
Plateau	....	......	......	....	....	....	..	....	1	38	120	1
Dorchester	....	......	......	....	....	....	..	....	1	29½	94	2
Total......	416	146	562	1	....	1	..	....	61	2625½	8594½	68
St. Lewis Ward.												
St. Lawrence	....	......	......	....	....	....	..	....	6	232	735	7
St. Constant.....	....	......	......	....	....	....	..	....	7	234	740½	7
St. Denis	....	......	......	....	....	....	..	....	1	62	410	1
Leduc Lane	....	......	......	....	....	....	..	....	3	179	774	5
St. Dominique...	....	......	......	....	....	....	..	....	6	149½	473	7
Carried over ..	....	......	......	....	....	....	..	....	23	856½	3132½	27

SCHEDULE No. 1.—(Continued.)

Names of Streets.	Length in Feet of Cast-Iron Pipes.			Number of Stop Cocks.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
St. Lewis—*Con.*												
Brought forw'd.	....	......	......	....	....	....	..	....	23	856½	3132½	27
German	....	......	......	....	....	....	..	....	1	162	513	1
Dumarais	....	......	......	....	....	....	..	....	1	98½	312	1
Cadieux	....	......	......	....	....	....	..	....	1	45	142½	1
Craig	....	......	......	....	....	....	..	....	1	27	86	1
Lagauchetiere	....	......	......	....	....	....	..	....	2	88	278	2
St. Elizabeth	....	......	......	....	....	....	..	....	2	163	517	2
St. Catherine	....	......	......	....	....	....	..	....	1	40	127	1
Total	....	......	......	....	....	....	..	....	32	1480	5108	36
St. James Ward.												
St. André	....	264	264	....	....	....	..	....	5	293	928½	9
Mignonne	....	135	135	....	....	....	..	....	3	58	184	3
Viger Square	....	344	344	....	....	....	..	....	....	40	127	5
Berrie	....	......	......	....	....	....	..	....	12	512½	1623	13
St. Hubert	....	......	......	....	....	....	..	....	5	310	982	5
Ontario	....	......	......	....	....	....	..	....	1	61½	195	2
Amherst	....	......	......	....	....	....	..	....	5	196½	622	8
Wolfe	....	......	......	....	....	....	..	....	2	50½	159½	3
St. Chrystophus	....	......	......	....	....	....	..	....	1	15	47½	1
St. N. Tollentine	....	......	......	....	....	....	..	....	6	265	838½	6
Dorchester	....	......	......	....	....	....	..	....	2	51	162	2
Beaudry	....	......	......	....	....	....	..	....	1	173	548	2
Visitation	....	......	......	....	....	....	..	....	3	94	297	3
Campeau	....	......	......	....	....	....	..	....	2	55	174	2
Montcalm	....	......	......	....	....	....	..	....	4	104	329	5
Craig	....	......	......	....	....	....	..	....	1	27	85½	1
Robin Lane	....	......	......	....	....	....	..	....	2	82½	262	3
St. Catherine	....	......	......	....	....	....	..	....	6	351	1112	8
Lagauchetiere	....	......	......	....	....	....	..	....	1	175	554	1
St. Mary	....	......	......	....	....	....	..	....	1	26	82	1
Rousseau	....	......	......	....	....	....	..	....	1	16	51	1
St. Denis	....	......	......	....	....	....	..	....	1	56	177	1
Dubord	....	......	......	....	....	....	..	....	1	46	145	2
Contant	....	......	......	....	....	....	..	....	1	16	51	1
Total	....	743	743	....	....	....	..	....	67	3074½	9736½	88
St. Mary's Ward.												
St. Mary	....	......	......	....	....	....	1	1	1	31	98	1
Panet	....	367	367	....	....	....	..	....	6	213½	678	8
Sydenham	....	120	120	....	....	....	..	....	2	48	152	2
De Salaberry	....	......	......	....	....	....	..	....	6	153	580	5
St. Ignace	....	......	......	....	....	....	..	....	2	65	206	4
Carried over	....	487	487	....	....	....	1	1	17	510½	1714	20

SCHEDULE No. 1.—(Continued.)

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe, in feet.	Weight of Lead Pipe, in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
ST. MARY'S—*Con.*												
Brought forw'd.	....	487	487	....	....	....	1	1	17	510½	1714	20
Ontario	....	......	......	....	....	....	..	....	1	45	142½	1
St. Catherine	....	......	......	....	....	....	..	....	3	183	580	3
Seaton	....	......	......	....	....	....	..	....	5	207	655½	5
Dufresne	....	......	......	....	....	....	..	....	1	20	63	1
Shaw	....	......	......	....	....	....	..	....	1	41	129½	2
Fullum	....	......	......	....	....	....	..	....	3	123	390	3
Colborne Avenue	....	......	......	....	....	....	..	....	1	121½	384	2
Visitation	....	......	......	....	....	....	..	....	3	63	200	3
Mignonne	....	......	......	....	....	....	..	....	1	23	72½	2
Craig	....	......	......	....	....	....	..	....	5	289	914	9
St. Adolphus	....	......	......	....	....	....	..	....	1	22	70	1
Total	....	487	487	....	....	....	1	1	42	1648	5315	52
GRAND TOTAL	1455	4144	5599	3	2	5	4	8	428	19288½	62728	529

SCHEDULE No. 2.—Shewing the Pipes, Hydrants, and Stop Cocks laid down, and the number of Houses supplied with water, in the City of Montreal, up to January, 1866.

NAMES OF WARDS.	LENGTH OF MAIN PIPES IN FEET.								Total Length of Main Pipes.	NUMBER OF STOP COCKS.									HY-DRANTS.		BRICK CHAMBERS.	HOUSES SUPPLIED.
	24 in.	16 inch	12 in.	10 in.	8 inch	6 in.	4 in.	Lead		24 in	16 in	12 in	10 in	8 in	6 in.	4 in.	2½ in	To'l No.	Pri-vate	Pub lic.		
East	......	....	......	3270	470	5140	6660	380	15920	..	..	..	6	..	6	17	3	32	....	30	59	563
Centre	......	....	......	1272	....	4426	6382	850	12930	..	..	..	1	..	5	16	2	24	2	25	49	402
West	......	630	965	1158	600	4905	8614	430	17302	..	1	2	1	1	7	21	3	36	....	33	66	584
St. Ann's	......	....	6577	1712	620	30834	45137	160	85040	..	..	7	2	1	32	70	1	113	10	100	222	1911
St. Antoine	1060	2020	6818	2478	900	27015	63688	360	104339	2	1	10	4	3	29	87	11	147	....	108	244	2258
St. Lawrence	......	....	......	5562	3250	9043	26715	360	44930	..	..	..	3	3	11	46	5	68	....	56	118	1786
St. Lewis	......	....	......	7917	1620	8592	25389	280	43798	..	..	..	5	1	9	34	5	54	....	61	110	1701
St. James	......	....	......	4478	....	15511	32430½	150	52869½	..	..	..	4	..	16	40	1	61	....	55	115	1605
St. Mary's	......	....	......	5923	....	20508	19232½	215	45878½	..	..	..	6	..	20	29	2	57	4	63	122	1288
TOTAL	1060	2650	14360	34070	7460	125974	234248	3185	423007	2	2	19	32	10	135	360	33	592	16	531	1105	12098
Rising Main	16887	....	24	......	....	15	....	....	16926	12	1	2	..	..	1	....	..	16	....	....	16	3
Grand Trunk R. R., Pt St. Charles	......	....	......	......	....	2383	2728	....	5111	..	..	..	..	..	2	3	..	5	10	....	15	......
Montreal City Pass. RR. Co., St. Mary Street	......	....	......	......	....	......	1015	....	1015	..	..	..	..	..	....	1	..	1	1	....	2	......
Military Government, at Hochelaga	......	....	......	......	....	......	2180	....	2180	..	..	..	..	..	....	1	..	1	1	....	2	......
Grand Trunk R. R., St Bonaventure Street	......	....	......	......	....	......	308	....	308	..	..	..	..	..	....	1	..	1	2	....	3	......
Canadian Rubber Co., St. Mary Street	......	....	......	......	....	......	104	....	104	..	..	..	..	..	....	1	..	1	1	....	2	......
TOTAL	17947	2650	14384	34070	7460	128372	240583	3185	448651	14	3	21	32	10	138	367	33	617	31	531	1145	12101

SCHEDULE No. 3.—Shewing the Hydrants and Stop Cocks renewed in 1865 :—

LOCATION.		STOP COCKS.					Hydrants.
		10 in.	8 in.	6 in.	4 in.	Total	
Corner of	St. Charles Baromée and Craig..	....	....	....	1	1	....
"	St. Antoine and Desrivieres	....	....	....	1	1	....
"	St. Peter and Notre Dame	....	....	....	1	1	....
"	German and Lagauchetiere.....	....	....	....	1	1	....
"	St. Radegonde	....	....	....	1	1	....
"	Latour	....	....	....	1	1	....
"	Craig and Busby Lane	....	....	....	1	1	....
"	St. Joseph and Chaboillez Square	1	....	....	....	1	....
"	Notre Dame and Place d'Armes.	....	....	....	1	1	....
"	Notre Dame and St. Gabriel	....	....	....	1	1	....
"	Little St. James and St. Gabriel.	....	....	....	1	1	....
"	St. Joseph and St. Felix	....	....	....	1	1	....
"	Mountain and School House....	....	....	....	1	1	....
"	DeBleury and Sherbrooke......	....	1	....	....	1	....
"	McGill and Common	....	....	1	....	1	....
"	Queen and Common	....	....	....	1	1	....
"	Craig and St. Urbain..........	....	....	....	....	....	1
"	Notre Dame and Bonsecours....	....	....	....	....	....	1
"	Beaver Hall and Dorchester	....	....	....	....	....	1
"	St. Dominique and Vitre	....	....	....	....	....	1
"	St. Constant and Vitre.........	....	....	....	....	....	1
"	Fullum	....	....	....	....	....	1
"	St. Frs. Xavier and St. Sacrament	....	....	....	....	....	1
	TOTAL............	1	1	1	13	16	7

SCHEDULE No. 4.—Shewing the Hydrants found frozen, and also those whose Chambers were pumped, during the Winter 1864 and 1865:—

By the Rise of Water.		For want of Sewerage.		By Leaks.		By other Causes.		TOTAL.		Hydrant Chambers Pumped.	
No. of Hydrants	No. of Times	No. of Hydrants.	No. of Times	No. of Hydrants.	No. of Times	No. of Hydrants.	No. of Times	No. of Hydrants.	No. of Times	No. of Hydrants.	No. of Times
20	1	16	1	1	1	14	1	51	1	7	1
19	2	6	2	1	2	5	2	31	2	4	2
2	3	5	3	.....	.....	1	3	8	3	13	3
3	4	.....	.....	1	4	1	4	5	4	5	4
1	5	1	5	.....	.....	.....	.....	2	5	.....	.....
.....	.....	.....	.....	.....	.....	1	6	1	6	.....	.....
1	8	.....	.....	.....	.....	.....	.....	2	8	.....	.....
.....	.....	.....	.....	.....	.....	1	9	1	9	.....	.....
.....	.....	.....	.....	.....	.....	1	13	1	13	.....	.....
46	89	29	56	3	7	24	59	102	211	29	74

During 1863 and 1864.

By the Rise of Water.		For want of Sewerage.		By Leaks.		By other Causes.		TOTAL.		Hydrant Chambers Pumped.	
29	43	29	82	2	4	25	53	85	182	41	105

SCHEDULE No. 5.—Shewing the Repairs done to Main Pipes, Hydrants & Stop Cocks, during the Year 1865.

POSITION.	DATE. 1865.	DIAMETER.	STOP COCKS	HYDRANTS.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF INJURY.
St. Peter, near Fortification..	Feby 9	4 in.	..	..	1	..	Put in a new piece of pipe.	Broken across.
Notre Dame and Bonsecours..	" 18		..	1	..	..	Replaced by a new one.	Broken by one of the City P. R'way Cars.
Sherbrooke and Bleury......	" 23	8 in.	1	..	..	..	Do.	Broken at the gate.
St. Bonaventure & Aqueduct.	Mar. 3	4 in.	..	..	..	1	Put in a new piece of pipe.	Bad pipe.
Shaw, near Dorchester	" 9	4 in.	..	..	1	..	Do.	Broken across.
Mill, near Mr. Tate	April 5	6 in.	..	..	..	1	Recaulked the joint.	Badly made.
College	" 5		..	1	..	..	Put in a new joint.	Do.
Common and Caillières......	" 5	4 in.	..	..	..	1	Do.	Elbow blown out by pressure.
Congregation..............	" 5	6 in.	..	..	..	1	Recaulked the joint.	Badly made.
St. Dominique..............	" 11	4 in.	..	..	1	..	Put in a new piece of pipe.	A hole in the casting.
St. Antoine and Desrivières..	" 11	4 in.	1	..	..	..	Replaced by a new one.	Old and worn out.
Notre Dame and St. Peter....	" 11	4 in.	1	..	..	..	Do.	Do.
Craig and St. Chas. Barromée.	" 11	4 in.	1	..	..	..	Do.	Do.
German and Lagauchetiere ..	" 11	4 in.	1	..	..	..	Do.	Do.
Common, at Royal Ins. Build'g	" 17	4 in.	..	..	1	..	Put in a new piece of pipe.	Broken across.
St. Mary, ne'r Colborne Avenue	" 21	12 in.	..	..	..	1	Recaulked the joint.	Badly made.
St. Catherine	May 11	24 in.	..	..	..	1	Do.	Do.
St. Elizabeth	" 13	3 in.	..	..	1	..	Put in a new piece of pipe.	A hole in the casting.
Wellington, south side Bridge	" 13	6 in.	..	..	1	..	Do.	By the sewer cut.
Do. do.	" 13	6 in.	..	..	..	2	Recaulked the joint.	By the settling of the ground.
St. Denis..................	" 13	10 in.	..	..	..	1	Do.	Badly made.
McCord....................	June 2	12 in.	..	..	..	1	Do.	By the settling of the ground.
Dalhousie	" 2	6 in.	..	..	..	1	Do.	Badly made.
Carried over......	....	......	5	2	6	11		

SCHEDULE No. 5.—(*Continued.*)

POSITION.	DATE. 1865.	DIAMETER.	STOP COCKS	HYDRANTS.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF INJURY.
Brought forward......	....	......	5	2	6	11		
Shannon	June 3	4 in.	..	..	..	1	Recaulked the joint.	Badly made.
Dalhousie..................	" 3	6 in.	..	..	1	..	Put in a new piece of pipe.	Broken across by the sewer.
Sanguinet and Vitre	" 15	4 in.	..	..	..	1	Put in a new joint.	Blown out by pressure.
Rising Main at Dorchester st.	" 15	24 in.	..	..	1	..	Put in a new length of pipe.	Split pipe.
Lagauchetiere and Panet	" 19	6 in.	..	..	..	1	Recaulked the joint.	Badly made.
St. Urbain, opp. Mr. Bronsdon	" 22	6 in.	..	..	1	..	Put in a new piece of pipe.	Split pipe.
McCord	July 8	12 in.	..	..	..	1	Recaulked the joint.	Badly made.
Wolfe, at Lagauchetiere			..	..	1	..	Put in a new piece of pipe.	Broken across.
Montcalme..................			..	..	..	1	Recaulked the joint.	Badly made.
St. Catherine and St. André..	July 20		..	1	..	..	Do.	Partly blown out by pressure.
Congregation...............	" 27	6 in.	..	..	..	1	Do.	Badly made.
St. Etienne and Wellington..	Aug. 11	6 in.	..	..	..	1	Do.	By fall of earth from new sewer.
Wellington, near Duke......	" 16	4 in.	..	..	1	..	Put in a new piece of pipe.	A hole in the casting.
Charlotte	" 18	4 in.	..	..	..	1	Put in a new plug.	Blown out by pressure.
St. Bonaventure, n'r the Creek	" 20	4 in.	..	..	..	1	Put in a new piece of pipe.	From settling of filling.
St. Peter, near Lemoine......	" 23	4 in.	..	..	1	..	Do.	Split pipe.
Union Avenue, near Burnside	" 24	4 in.	..	..	..	1	Put in a new joint.	Blown out by pressure.
Fullum, near the Church	" 24		..	1	..	..	Replaced by a new one.	By runaway horse.
	1866.							
Beaudry	Jan. 4	4 in.	..	..	1	..	Put in a new piece of pipe.	Broken across.
St. Felix, at Dagg's Mill.....	" 16		..	1	..	..	Put in a new joint.	Badly made.
Foundling, at Grey Nunnery.	" 18	4 in.	..	..	1	.	Put in a new piece of pipe.	From settling of filling of new sewer.
	....	......	5	5	14	21		

SCHEDULE No. 6.—Experiment No. 1, to Test the Consumption of Water in the City of Montreal, on the 5th and 6th of July, 1865.

	Number of Imperial Galls. per half hour.	Rate in Imperial Galls. per 24 hours.	REMARKS.		Number of Imperial Galls. per half hour.	Rate in Imperial Galls. per 24 hours.	REMARKS.
P.M.				A.M.	1,805,988		
7.30	90,445	4,341,360		7.30	114,657	5,503,536	
8.00	88,776	4,261,248		8.00	108,532	6,209,536	
8.30	86,688	4,161,024		8.30	116,883	5,610,384	
9.00	75,616	3,629,568		9.00	115,412	5,539,776	
9.30	74,855	3,593,040		9.30	*144,712	6,946,176	*Highest Consumt'n.
10.00	74,582	3,579,936		10.00	126,067	6,051,216	
10.30	70,686	3,392,928		10.30	122,867	5,897,616	
11.00	70,269	3,372,912		11.00	117,162	5,623,776	
11.30	66,651	3,199,248		11.30	100,046	4,802,208	
12.00	65,121	3,125,808		12.00	113,961	5,470,128	
12.30	64,286	3,085,728		12.30	96,430	4,628,640	
1.00	67,347	3,232,656		1.00	97,959	4,702,032	
1.30	*60,946	2,925,408	*Lowest Consumt'n.	1.30	105,055	5,042,640	
2.00	62,477	2,998,896		2.00	121,057	5,810,736	
2.30	62,477	2,998,896		2.30	139,147	6,679,056	
3.00	62,233	2,987,184		3.00	116,883	5,610,384	
3.30	62,616	3,005,568		3.30	117,539	5,641,872	
4.00	62,198	2,985,504		4.00	117,883	5,658,384	
4.30	64,981	3,119,088		4.30	117,997	5,663,856	
5.00	63,172	3,032,256		5.00	117,719	5,650,512	
5.30	80,626	3,870,048		5.30	134,693	6,465,264	
6.00	105,194	5,049,312		6.00	107,528	5,161,344	
6.30	112,986	5,423,328		6.30	113,265	5,436,720	
7.00	110,760	5,316,480		7.00	96,567	4,635,216	
	1,805,988				4,586,009		

SCHEDULE No. 6.—(*Continued*).

Experiment No. 2, to Test the Consumption of Water in the City of Montreal, on the 23rd and the 24th of July, 1865.

	Number of Imperial Galls. per half hour.	Rate in Imperial Galls. per 24 hours.	REMARKS.		Number of Imperial Galls. per half hour.	Rate in Imperial Galls. per 24 hours.	REMARKS.
P.M.				A.M.	1,852,861		
12.00	59,554	2,858,592		12.00	88,861	4,265,328	
12.30	67,625	3,246,000		12.30	91,280	4,381,440	
1.00	67,346	3,232,608		1.00	89,319	4,287,312	
1.30	65,259	3,132,432		1.30	90,723	4,354,704	
2.00	63,450	3,045,600		2.00	92,670	4,448,160	
2.30	61,224	2,938,752		2.30	91,558	4.394,784	
3.00	58,304	2,798,592		3.00	87,383	4,194,384	
3.30	64,702	3,105,696		3.30	88,218	4,234,464	
4.00	*55,658	2,671,584	*Lowest Consumt'n.	4.00	82,652	3,967,296	
4.30	63,868	3,065,664		4.30	88,218	4,234,464	
5.00	65,676	3,152,448		5.00	85,853	4,120,944	
5.30	67,764	3,252,672		5.30	86,890	4,170,720	
6.00	85,714	4,114,272		6.00	89,331	4,287,888	
6.30	80,148	3,847,104		6.30	85,992	4,127,616	
7.00	83,627	4,014,096		7.00	85,574	4,107,552	
7.30	90,584	4,348,032		7.30	83,626	4,014,048	
8.00	90,862	4,361,376		8.00	79,313	3,807,024	
8.30	95,454	4,581,792		8.30	78,756	3,780,288	
9.00	89,887	4,314,576		9.00	77,086	3,700,128	
9.30	*96,567	4,635,216		9.30	70,686	3,392,928	
10.00	95,453	4,581,744	*Highest Consumt'n.	10.00	74,025	3,553,200	
10.30	*96,567	4,635,216		10.30	68,042	3,266,016	
11.00	92,949	4,461,552		11.00	65,815	3,159,120	
11.30	94,619	4,541,712		11.30	63,868	3,065,664	
	1,852,861				3,838,600		

SCHEDULE No. 7.—Shewing the Average Daily Consumption of Water, in Imperial Gallons, for the year 1865, compared with that of 1864.

	Average, 1865.	Average, 1864.	Increase	Decrease	Total Consumption for 1865.
February	2,985,838	3,523,169		537,331	83,603,468
March.............	3,760,457	3,332,475	427,982		116,574,193
April	4,493,937	4,003,223	490,714		134,818,129
May	3,187,978	3,855,934		667,956	98,827,291
June	4,928,084	4,025,742	902,342		147,842,533
July..............	4,754,354	4,381,353	373,001		147,384,992
August	5,403,834	4,602,058	801,776		167,518,848
September	4,974,663	4,239,849	734,814		149,239,914
October...........	4,531,097	4,323,540	207,557		140,464,012
November	3,449,815	3,728,530		278,715	103,494,458
December..........	4,332,526	4,313,023	19,503		134,308,299
1866. January	4,060,503	4,426,068		365,565	125,885,606
	50,863,086	48,754,964	3,957,689	1,849,567	1,549,951,743
Daily Average 1865.	4,238,590	4,062,914	Monthly Av., 1865		129,162,645
" " 1864.	4,062,914		" " 1864		124,029,944
Increase	175,676				5,132,701

SCHEDULE No. 8.—Duty of the two Breast Wheels.

	Revolutions. Wheel No. 1.	Revolutions. Wheel No. 2.	Total No. of Revolutions.	Number of Gallons Pumped.	Olive Oil in Gallons	Tallow in lbs.	Coal Oil in Gallons	Coal for Fuel in lbs.
February........	51,132	493,516	544,648	83,603,468	8.03	27.05	10.54	17,776
March	253,192	506,249	759,441	116,574,193	7.97	22.04	10.46	17,838
April...........	598,802	279,492	878,294	134,818,129	8.43	20.10	8.97	13,330
May.............	506,444	137,382	643,826	98,827,291	7.09	17.10	7.28	4,940
June............	550,458	315,780	866,238	132,967,533	9.92	24.03	7.50	890
July	567,495	356,860	924,355	141,888,492	8.08	23.06	7.48	....
August	630,863	460,465	1,091,328	167,518,848	10.31	29.03	8.50	....
September.......	529,406	442,841	972,247	149,239,914	11.06	36.00	10.27	616
October	550,684	364,391	915,075	140,464,012	12.00	26.03	13.10	4,078
November.......	355,047	319,184	674,231	103,494,458	16.20	18.00	14.80	7,700
December	218,007	409,210	627,217	96,277,809	10.06	16.02	11.75	13,318
1866. January.........	86,665	188,294	274,959	42,206,206	4.18	6.08	9.55	18,880
	4,898,195	4,273,664	9,171,859	1,407,880,353	113.33	267.06	120.20	99,366
Last Year	5,062,298	4,633,853	9,696,151	1,488,359,328	132.57	249.05	96.87	108,831

SCHEDULE No. 9.—Duty of the Turbine Wheel.

	Number of Gallons Pumped.	Olive Oil in Gallons	Tallow in Lbs.	Coal Oil in Gallons	Coal for Fuel in Lbs.
June	14,875,000	7.77	....	....	....
July	5,496,500	2.78	....	....	....
August	....	0.76	....	....	....
September	....	....	1.04	0.71	....
December	38,030,490	8.67	....	5.02	7,260
1866.					
January	83,669,400	14.82	10.05	8.24	8,352
	142,071,390	34.80	11.09	13.97	15,612

COMPARATIVE SCHEDULE No. 10.—Shewing the daily Consumption for each month from 1858 to 1865 in the City of Montreal.

DAILY AVERAGE.	1858.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
January	2,295,000	3,209,000	3,035,000	3,590,300	4,334,265	3,676,755	4,343,153	4,426,068
February	2,295,000	3,295,000	3,283,000	2,904,760	3,815,390	3,231,875	3,523,169	2,985,838
March	2,295,000	3,225,000	3,238,000	2,695,220	2,279,100	3,087,880	3,332,475	3,760,457
April	2,752,000	3,092,000	3,064,000	2,828,870	3,389,637	3,977,615	4,003,223	4,493,937
May	2,780,000	3,221,000	3,032,000	3,149,628	3,715,171	4,307,049	3,855,934	3,187,978
June	3,000,000	3,938,000	3,251,000	3,020,164	3,786,468	4,479,469	4,025,742	4,928,084
July	2,942,000	3,410,000	3,463,000	3,204,260	3,949,056	4,154,671	4,381,352	4,754,354
August	2,768,000	3,621,000	3,835,000	3,094,612	3,947,483	4,504,426	4,602,058	5,403,834
September	3,026,000	3,065,000	3,417,000	3,611,212	3,738,938	4,526,220	4,239,849	4,974,663
October	2,819,000	3,200,000	3,661,000	3,270,000	3,831,535	4,055,170	4,323,540	4,531,097
November	2,805,000	3,047,000	2,889,000	3,130,980	3,621,323	3,529,333	3,728,530	3,449,815
December	2,900,000	3,117,000	3,250,000	2,254,750	3,748,800	3,624,489	4,213,023	4,332,526
	32,678,000	39,140,000	39,428,000	37,844,756	44,157,116	47,154,952	48,572,049	51,228,651
Daily average for the whole Year.	2,723,166	3,261,666	3,285,666	3,153,729	3,679,759	3,929,579	4,047,670	4,269,054
Increase	......	538,500	24,000	......	526,030	249,820	118,091	221,384
Decrease	......	......	......	131,937	......	......	......	......

SCHEDULE No. 11.—Shewing the Rain and Evaporation at Reservoirs, 1865.

	RAIN GUAGE.				Evaporation in inches.
	Rain.	Snow.	Reduced to Rain.	Total Rain.	
February	0.55	14	1.30	1.85	1.33
March	1.11	11¼	1.78	2.89	1.10
April	3.20	1	0.45	3.65	1.56
May	2.33	....	....	2.33	4.64
June	2.56	....	....	2.56	4.66
July	3.01	....	....	3.01	4.99
August	1.35	....	....	1.35	4.90
September	1.82	....	....	1.82	5.23
October	1.60	¾	0.21	1.81	2.55
November	0.47	7	2.35	2.82	2.04
December	1.84½	9	0.99	2.83½	1.33
1866.					
January		16½	1.28	1.28	1.49
	19.84½	59½	8.36	28.20½	35.82
In 1864	24.38	71	6.09½	30.47½	33.43

SCHEDULE No. 12.

STATEMENT of the EXPENSES from 1st February, 1865, to 1st February, 1866:—

WORKING DEPARTMENT.		$ cts.	$ cts.
Amount expended on Aqueduct for repairing fences, ditches, stop gates, &c.:—			
Materials	$120.13		
Wages	175.65		
		295.78	
WHEEL HOUSE.			
Amount expended to repair Machinery, for Fuel, Oil, Tallow, &c	$1,805.05		
Staff at Wheel House	2,379.96		
Laborers' Wages	370.07		
		4,555.08	
TAIL RACE.			
Amount expended for repairs	$ 261.35		
" paid R. Philbin's Balance Contract	1,455.93		
		1,717.28	
PIPE TRACK.			
Amount expended for repairs		59.43	
McTAVISH STREET RESERVOIR.			
Amount expended for Trees, Fuel, &c	$134.80		
" " " Wages	62.00		
		196.80	
Amount carried forward		6,824.37	

			$ c.	$ c.
Amount brought forward			6,824.37	
FIRE HYDRANTS.				
Amount expended for Materials		$ 73.56		
" " " Wages		1,123.49		
			1,197.05	
DISTRIBUTION PIPES.				
Amount expended to repair Service Pipes, Materials	$2,146.23½			
Wages for do.	1,826.83			
		3,973.07		
Amount expended to repair Main Pipes, Wages	$1,011.72			
Materials	878.73			
		1,890.45		
Repairs to Streets and Footpaths		1,320.52		
			7,184.04	
PUBLIC FOUNTAINS & INSPECTION.				
Wages			53.72	
WATCHING AT VALVES & RESERVOIR.				
Wages			306.50	
SHOP DEPARTMENT.				
Amount expended for Materials		670.10		
" " " Wages		1,833.00		
			2,503.10	
OFFICE.				
Officers' Salaries		5,067.82		
Salaries of Bailiffs, Turn Cocks, Policemen, Extra Clerks, &c		2,701.37		
			7,769.19	
Stationery and Printing		947.21		
Rent and Damages		562.50		
Assests and School Taxes		123.80		
Insurances		77.18		
Sundries		258.73		
Cab Hire		359.12		
			2,328.54	
				28,166.51
PIPE LAYING.				
Amount expended for Materials		4,517.16		
" " " Wages		5,011.56		
			9,528.72	
				9,528.72
EXTENSION OF WHEEL HOUSE.				
Amount paid Champeau & Dufort on their Contract		3,732.36		
Amount paid Denis Dufort on his Contract.		4,148.50		
" " John McDougall "		12,249.13		
" " Emile Geyelin for Professional Services, and for an Air Pump.		715.00		
Amount paid for Sundries		132.23		
			20,977.22	
" " " Laborers' Wages			1,786.85	
				22,764.07
				$60,459.30

INVENTORY of STOCK and TOOLS on hand January, 1866.

CAST IRON.

	24in.	16in.	12in.	10in.	8in.	6in.	4in.	3in.
Cast Iron Pipe in feet	276	59	189	123	96	182	260	128
Four Way Branches	......	......	8	8	4	15	17	......
Three " "	......	......	7	14	1	7	33	......
Sleaves	1	2	11	5	7	20	10	12
Taper Pipes	......	1	2	4	3	1	10	......
Elbows	......	......	......	......	......	......	14	......
Forks	1	......	......	......	......	......	......	......
Caps	......	4	1	3	5	9	......	......
Plugs	......	4	16	4	12	6	1	1
Stop Cocks	1	1	4	4	1	30	26	......

1 New Hydrant.
1 Old do.
3 Old do. (Water Taps.)
3-4 Old Stop Cocks.
8 Hydrant Posts.

3 Hydrant Seats.
19 Pieces for raising Hydrants.
2 Hydrant Covers.
2 Stop Cock do.
350 Service Plates.

WORK SHOPS NOTRE DAME STREET.

BRASS WORKS.

DIAMETER.	1½in.	1¼in.	1in.	⅝in.
New Stop Cocks with Couplings	....	....	78	162
Old do.	17	....	94	110
New Elbows with Couplings	....	....	22	295
Old do.	16	....	78	5
Single Joints	....	....	40	764
Three Way Branches	....	....	53	133
American Nozles	....	....	....	45
Hydrant Sludge Cocks	....	....	....	46
Bed Cocks	20	16	....	....
One set Jet d'eau Fixings	....	....	....	....

LEAD PIPE AND OTHER LEAD.

1½ Bundles of 1½ inch Pipe,
12 do. 1 " do.
2 do. ⅝ " do.
20372 lbs. of Pig Lead.

250 lbs. of 1 in. Lead Pipe in pieces.
600 " ⅝ " do. do.
5 " Solder.
200 " Old Lead.

TOOLS AND UTENSILS AT SHOPS, NOTRE DAME STREET.

50	Picks.
45	Shovels.
8	Crow Bars.
7	Sledges.
1	Hand Barrow.
4	Hand Saws.
3	Hand Axes.
3	Framing Chisels.
10	Cast Steel Drills.
2	Hoisting Gins.
3	Sets of Blocks.
1	Set of Rope for Tackles.
2	Old Tool Carts.
3	Wrapping Chains.
1	Cable Chain.
11	Buckets.
2	Grind Stones.
1	Square Shovel.
2	Boxes of Pipe Layer's Tools.
28	Wooden Shovels.
6	Wheel Barrows.
8	Cribs.
5	Hand Hammers.
2	Drill Frames.
9	Ratchet Braces.
2	Iron Pumps.
3	Square Wooden Pumps.
2	Ladles.
1	Skimmer.
3	Pipe Layer's Pots.
1	Spirit Level.
1	Force Pump.
3	Hand Bells.
33	Valve Keys, assorted.
9	Stop Cock Keys, "
1	Pair Twin Sleighs.
1	Steam Boiler.
2	Small Sleighs.
2	Deck Scrapers.
5	Augers, assorted.
4	Chisels.
5	Screw Wrenches.
20	Iron "
3	Hand Braces.
12½	Doz. of Handles for Picks, &c.
50	feet of India Rubber Hose.
75	Colored Lamps.
9	Coal Oil "
8	Old Drill Frames.
4	Oil Cans.
1	Platform Scale.
1	Balance "
1	Clock.
2	Pairs Long Boots.
7	Tin Lanterns.
2	Steam Gauges.
1	Boiler for Stove.
3	Square Stoves.
1	Old Fire Engine Pump.
2	Sets of Rope Baskets.
1	" India Rubber.
45	Hand Spikes.
54	Birch Brooms.
1	Vice.
2	Wood Saws.
1	Framing Lathe.
1	Wooden Beetle.
1	Adze.
1	Circular Saw.
18	Rammers.
2	Joint Machines.
1	Set of Augers for Plates Brass"
2	" " " Iron"
2	Round Globe Lamps.

BLACKSMITH'S TOOLS.

1	Anvil.
1	Beck Horn.
2	Vices.
3	Drill Frames.
36	Pair Tongs.
29	Heading Tools.
19	Swedges.
76	Mandrills & Punches.
1	Bellows.
1	Portable Forge.
4	Braces.
46	Screw Plates and Dies.
1	Box Small Tools.
1	Finishing Block and Plate.
1	Grindstone.
1	Copper Stamp.
2	Hand Hammers.
1	Sledge,
5	Cold Chisels.
1	Boring Machine.
1	Set of Stamps " Figures and Alphabet."

WATER METERS.

2	2½-inch		Kennedy's.	
2	⅝	"	do.	(1 damaged.)
1	½	"	do.	(do.)
2	1	"	Worthington's	(do.)
1	⅝	"	"	
1	⅝	"	Aubin's.	

TOOLS AND UTENSILS—(*Continued*).

PATTERNS.

1	Set of Patterns & Core Boxes for 1" Stop Cocks.
1	do. do. for 1" Elbows.
1	do. do. for ⅝" do.
1	do. do. for ⅝" Stop Cocks.
1	do. do. for 1" Three ways
1	do. do. for ⅝" do.
1	do. do. for 1" Joints.
1	do. do. for ⅝" do.

SUNDRIES.

250	lbs. of Iron Bars.
50	" Jute Packing.
10	" Halter Rope.
50	" Iron Straps.
12	American Hydrant Handles.
100	lbs. of Pressed Spikes 6 inches
100	" Cut Nails.
1½	Gallons Lamp Oil.
42	" Coal Oil.
25	Lengths of Stove Pipe.
3	Elbows.
2	Chaldrons of Smith Coal.
70	Rings for Box Covers.
8	lbs. of Nuts.
¾	Barrels Cement.
50	lbs. of Zinc.
½	Gallon of Olive Oil.
1	Thermometer.
20	Rings for Hydrant Frames.
12	Valve Spindles.
30	Short Boxes.
50	Service Boxes.
6	Old Cribs.
96	Service Stones.
17	Value "
12	Hydrant "
3	Cedar Posts for Hydrants.
2	Hoisting Pins.
100	lbs. of old Brass.
150	" " Wrot. Iron.
2½	Tons of Scrap Iron.

AT WHEEL HOUSE.

3	Trucks.
1	Slush Pump.
1	Wheel Barow.
1	Hydraulic Press.
1	Gin.
11	Blocks of different sizes.
1	Box of Pipe Layer's Tools.
9	Punches.
1	Bear Punch Frame.
1	6" Square Brass head Key.
1	Round Driver.
10	Hammers.
1	Ratchet Brace.
1	Strap for Pump.
1	Air Pump Bucket
4	Keys "Boss & Crossheads.'
6	Steel Drivers.
3	Sledges.
2	Key Protectors.
5	Ring Bolts.
11	Iron Covers for Brass Bearings
20	Wrenches.
3	Screw Plates.
2	Saws.
3	Rymer Handles.
3	Valve Crank Handles.
10	Crow Bars.
1	Iron Pump Handle.
18	Chisels.
38	Fathoms of Manilla Rope.
4	Rakes.
7	Lifting Chains.
1	Cast Iron Bracket.
1	Bench Vice.
1	Adze.
1	Screw Plate and Dies.
1	Lot of Wrenches of different sizes and length.
2	Iron Drill Braces.
1	Small Saw for Iron.
6	Augers.
2	Pairs of Callopers.
2	Caulking Irons.
14	Drills of different sizes.
5	Eye Bolts.
1	Pair of Compasses.
1	Carpenter's Square.
1	Steam Gauge.
2	Oil Cocks.
2	Gauge "
5	Sludge "
5	Hose Couplings.
15	Files.
3	Planes.
2	Basins.
2	Cupboards.
2	Writing Desks.
1	Pair Scales & Weights.
2	Sand Glasses.
3	Thermometers.

TOOLS AND UTENSILS—(*Continued*).

1	Bunk and Buffalo Robe.
1	8 Day Clock.
6	Mammoth Heater Stoves.
135	Lengths of Stove Pipes.
16	Elbows.
3	T Pipes.
3	Coal Scuttles.
1	Coal Box.
3	Measuring Rods.
1	2 foot Grindstone.
2	Sets of Blocks.
6	Fathoms of Rope.
150	Feet India Rubber Hose.
1	Axe.
4	Ladders.
2	Rules for Drawing.
1	Iron Drill Stand.
16	Weights for Valves.
1	Snatch Block.
1	Bench and Vice.
1	Anvil.
1	Bellows.
3	Pairs of Tongs.
4	Bolt Tools.
1	4 inch Valve Chest.
6	Wheel Barrows.
13	Wrought Iron Straps for 24 inch Pipe.
2	Crab Winches.
1	Lifting apparatus for St. Pierre Bridge.
1	Cast Iron Column.
2	Lead Pots.
1	Ladle.
1	Cast Iron Socket Sep.
1	Lignum Vitæ plug for Sep.
1	Large Window.
40	Shovels.
29	Picks.
4	Settees.
6	Boat Hooks.
1	Drawing Table and Trestles.
4	Wooden Shovels.
1	Four Sheaved.
2	Large Double Doors.
1	Cupboard Frame and 2 doors.
2	Flag Masts.
39½	Teeth for Spur Wheel.
9½	do. Bevel do.
1	Wrought Iron Machine for Joints.
2	Steel Jumpers.
10	Bucket Braces.
8	Crank Handles.
1	Seive.
2	Socket Hooks.
1	Wedge Cutting Machine.
2	Bucket Straighteners.
1	Carpenters Set Stone.
1	Spirit Level.
1	Carpenter's Brace and 2 Bitts.

PATTERNS.

2	Patterns of Girders.
1	do. Segment of Wheel
1	do. Bridge Bracket.
1	do. Girders.
1	do. Pinion.
1	do. Sluice Gate.
2	do. Large Bevel Pinion.
2	do. Pillow Blocks.
1	do. Girder.
1	do. Cover Valve Chest
2	do. Guide for Sluice Gates.
1	do. Crank Brass.

IRON & BRASS WORKS.

6	Segments of Large Wheel.
1	Pinion for do.
7	Side Plates for Breast Wheels.
1	Segment for centre of Wheels.
4	Spare Arms for Breast Wheels.
3	24in. Slip Sockets.
30	feet of 24in. Pipe.
36	do. 6in. do.
6	do. 30in. do.
7	do. 4in. do.
1	Spare Bonnet of 30in. Pipe.
4	4in. Flange Pipes.
5	30in. Slip Sockets.
1	24in. Fork.
2	30in. do.
1	24in. Stop Cock.
1	4in. Plug.
2	Old Branches.
1	Bar of 1in. Iron.
6	lbs. of Spikes.
5	cwt. of Bolts, Nuts, Rivets, &c.
95	feet of Lightning Rod.
424	lbs. of Old Brass.

TOOLS AND UTENSILS—(*Continued*).

SUNDRY MATERIALS.

1 Telegraph Post.
2 Spare Pumps and Valves.
15 Cedar Fence Posts.
34 3in. Planks.
71 Scantlings.
20 yards Canvas.
150 Roofing Slates.
20 feet of 6in. Earthenware Pipe.
250 do. Square Hemlock.
226 do. Cedar.
466 do. Tamarack.
752 do. Flatted Hemlock.

UTENSILS.

26 Oil Lamps.
3 Brass Lamp Stands.
21 Lamp Globes.
5 Candlesticks.
6 Scrubbing Brushes.
2 Corn Brooms.
5 Tubes for Air Vessels.
2 Grease Boxes.
2 Tin Drainers.
1 Iron Tallow Barrel.
1 Tin Barrel.

STORES.

130 lbs. of Packing Rope.
5 " Ground Sulphur.
12 " Sole Leather.
30 " Tallow.
25 " Lead.
17 " India Rubber.
4 " ⅛ Wire.
10 Packages of Lamp Black.
1 keg Dry Red Lead.
130 lbs. of Leatherage.
10 gallons of Coal Oil.
30 " Olive "
4 barrels of Cement.
35 tons of Lehigh Coal.

AT RESERVOIR.

8 Crow Bars.
1 Iron Shovel.
2 Wooden "
3 Thermometers.
1 Snow Gauge.
1 Evaporation Gauge.
4 Cold Chisels.
1 Screw Wrench.
1 Gun.
2 Glass Lamps.
2 Stoves.
1 Coal Scuttle.
1 Seive.
2 Picks.
1 Rain Gauge.
1 Iron Pounder
2 Oil Cans.

AT GATE ON AQUEDUCT.

1 Axe.
2 Wooden Shovels.
1 Cold Chisel.
1 Iron Rake.
1 Wire Basket.
1 Glass Lamp.
1 Thermometer.
1 Wheelbarrow.
4 Scythes and Snaithes.
109 3in. Planks.

AT ENTRANCE OF AQUEDUCT.

4 Iron Chains.
12 Iron Tubes for Blasting.
1 Sounding Lead.
1 Grabbing Tool.
2 Iron Shovels.
3 Peck Poles.
1 Cold Chisel.

OFFICE.

1 Mahogany Writing Desk with Stool.
1 do. do. & Table.
1 Pine Drawing Table.
1 Book Case.
1 Wash Stand and Basin.
2 Large Chairs.
5 Chairs.
1 Map of the City of Montreal.
3 Boxes for Old Books, &c.
3 Pine Drawing Boards.
1 Thermometer.
1 Letter Press.
1 Eight-day Clock.
2 Waste Baskets.
8 Yards of Carpet.
1 lot Stop Cocks, &c., (samples)
1 Transit Instrument, with box. and rod, complete.
1 Level do. do.
1 Chain.
5 Boxes Drawing Instruments.

SPECIAL REPORT

OF THE

WATER COMMITTEE

AND OF THE

Superintendent of Water Works,

UPON

THE DIFFICULTIES EXPERIENCED

DURING THE WINTER 1865–'66,

IN SUPPLYING THE CITY
WITH WATER.

TO HIS WORSHIP THE MAYOR, THE ALDERMEN AND CITIZENS OF THE CITY OF MONTREAL.

THE WATER COMMITTEE.

RESPECTFULLY REPORT,

That in view of the serious difficulties experienced during the past winters and more especially during the last winter months, in obtaining a sufficient supply of water for the City, Your Committee, in the month of March last, instructed the Superintendent of Water Works to report on the causes which led to those difficulties, and the best means of remedying the evil. That Report which is herewith submitted, was prepared by the Superintendent with a great deal of care and attention, and is accompanied by valuable and interesting tables, and statements, showing:—

1st. The working of the Wheels and levels of water in winter since the establishment of the Water Works.

2nd. The cost of the proposed covering of the Aqueduct.

3rd. The cost of a proposed new Reservoir on the Priests' Farm.

4th. The cost of enlarging the present Reservoir.

5th. The cost of a proposed Pumping Steam Engine at the Wheel House.

6th. The expense incurred during last winter on account of the difficulties experienced in working the Aqueduct, amounting to no less a sum than $5,880.77.

The cause of the deficiency in the winter supply of water is ascribed by the Superintendent to the scarcity of water in the Aqueduct, occasioned by the great fall in the level of the river, that usually takes place in winter, and by the heavy and solid volume of ice formed ove the Aqueduct by the severe frost of the season; the re sult being that there is not sufficient head water left t work the wheels to any advantage.

To remedy that evil, two plans are su first is to prevent the action of the frost o and the accumulation of ice thereon, b whole surface of the Aqueduct with tim

This, it is estimated, will entail a cost of $82,000. Your Committee however, are, of opinion that by covering the Aqueduct from the settling basin up to the Stop Gates would cost about $40.000, and be equally beneficial.

The second plan, to which the Superintendent seems disposed to give the preference, consists in the erection of a Pumping Steam Engine at the Wheel House, to be used during such time only as the wheels cease to work.

The cost of this proposed Engine is estimated at $67,000, but from an offer made to them recently, Your Committee have reason to believe the cost of said Engine may be reduced to $55,000 including the necessary building.

The relative merits of both these projects were fully discussed by Your Committee, and, as there is a diversity of opinion on the subject amongst the members, inasmuch as they were unable to come to an unanimous decision upon either of the said plans, Your Committee have come to the conclusion of leaving it to the Council to determine which of the said plans submitted should be adopted. Whatever plan is adopted, however, it will be necessary to provide means to meet the cost of carrying out the same, as there are no funds at the disposal of the Corporation available for that purpose.

Application should, therefore, be made to the Legislature at the earliest possible moment for power to effect a special loan for the object in question; and as it is of the highest importance that no time should be lost in carrying into effect the plan that will be selected, in order to avoid, if possible, a recurrence of the serious inconveniencies to which we were exposed last winter, Your Committee suggest whether it would be advisable to anticipate the action of the Legislature, by commencing operations at once on the faith of the loan which will, no doubt, be granted under the circumstances.

The whole nevertheless respectfully submitted.

(*Signed,*) J. W. McGAUVRAN, *Chairman,*
D. GORRIE,
F. DAVID,
J. B. GOYETTE,
D. BROWN,
BENOIT BASTIEN.

COMMITTEE ROOM,
City Hall, Montreal, 17th May, 1866.

TO THE CHAIRMAN AND MEMBERS OF THE WATER COMMITTEE.

GENTLEMEN,

Having been requested by you to report upon "the cause of the embarrassment in the Aqueduct, and on the means to be adopted to avoid the recurrence of a similar calamity in future," I beg leave to offer the following statements as the results of my investigations:—

Before entering upon the subject, I deem it expedient to report briefly upon the difficulties experienced every winter since the Aqueduct has been in operation. For this purpose I have prepared Schedule No. 1, shewing the working of the Wheels since 1857, and the levels of water in the Aqueduct since 1861. The datum of these levels is the low water in the Harbour of Montreal, taken from the stone coping of Lock No. 1 of the Lachine Canal, which point stands 12.30 feet above the assumed low-water mark. To make this Schedule as short as possible. I have only taken the average of the four winter months of each year, these being the only months during which the difficulties now under consideration are experienced.

By this Schedule it is seen that the water in the St. Lawrence at the entrance is generally the lowest in February, when the Aqueduct is covered with ice and snow.

The Aqueduct and the Wheels were put into operation in the fall of 1856. At that period the consumption of water in the City was about 2 millions of gallons daily, in 1857 about 2,500,000 gallons; in 1858 about 3,000,000 gallons.

Up to 1859 the working of one of the Breast Wheels was more than sufficient to supply the City, and a good deal of the water was wasted at the Wheel-House by the blow-off pipe which was kept partly open. This had the effect to reduce the pressure on the pumps and, consequently, to render the motion of the wheels easy when working in back water during the winter. In 1859, the consumption of water being a little over 3 millions of gallons, it required the full work of one of the Wheels and that of the other for a few hours in the day to keep up the supply. In that winter the speed of the pumps was reduced from 14 to 12 strokes per minute, in December, and to 10 and 8 strokes, in January. On the 9th day of this last month the Wheels were stopped during the whole of that day, on account of the back-water on the Wheels, and of the lowness of the head water. Up to that period the difficulties caused by the back-water and the ice on the Aqueduct were not felt to the extent that they have been during the subsequent winters. From that time it has been difficult during the winter months to give the full supply to the City, owing to the demand for water caused by the gradual extension of the distribution pipes throughout the streets, and the rapid increase of the population.

To make up for this deficiency which has occurred every winter since, it was found necessary to curtail the supply, by shutting off the water from the Reservoirs, and allowing to the Citizens only the water that could be raised daily by the pumps; supplying by day-time the lower parts of the City, and by night, the upper parts. The Reservoirs have been so shut off every year as follows:—In 1860, from the 16th of February till the 22nd of March; in 1861, from the 25th of January till the 8th of April; in 1862, from the 4th of January till the 16th of April; in 1863, from the 12th of February till the 13th of April; in 1864, from the 21st of January till the 2nd of April; in 1865, from the 18th of January till the 4th of April; in 1866, from the 8th of January up to date.

During the winters 1861 and 1862 the supply was so short that water carriers had to be employed to carry water to the upper part of the City, the Wheels being unable to force the water to that level.

For several winters men have been employed to cut a channel through the ice in the entrance of the Aqueduct in order to get rid of the anchor ice which was retarding the flow of water upon the Wheels. Piers were also built at that point into the river with the view to check the introduction of this anchor ice; but all these works, undertaken as experiments, proved entirely useless.

In the summer of 1863 all these piers were removed, the entrance of the Aqueduct deepened, and a new Tail Race was constructed to take away the back-water from the Wheels.

These works have since proved very successful, and have removed a great part of the difficulties, but there still remained the obstructions caused during the winter months by the ice covering the Aqueduct, which reduced the power to about one-third of its summer capacity.

In 1863, the consumption of water was a little more than 4 millions of gallons during the summer months, and would have been as much during the winter had the Wheels been able to work at their full speed.

In 1864, the consumption rose to 4½ millions, and last year to 5 millions.

During last summer the whole power of the two Breast Wheels was nearly required to keep the necessary supply in the Reservoirs, but in the winter this supply had to be curtailed to 3 millions, which was all that could be then pumped daily by the Breast Wheels—the Aqueduct not being able to afford more water.

This winter these difficulties have exceeded those experienced in former years, and the City would probably have been entirely without water for several days, but for the new Turbine Wheel.

After this short narration of the difficulties attending the working of the Wheels since the beginning of operation, I will now try to indicate the causes which have brought on the difficulties of this winter.

THE CAUSES OF THE PRESENT EMBARRASSMENT IN THE AQUEDUCT ARE:—

1st.—The unusually low state of water in the St. Lawrence and in the Aqueduct, supplying the Pumping Powers.

2nd.—The formation of ice over the Aqueduct to a greater than ordinary thickness.

3rd.—The sinking of this volume of ice caused by the rise and fall of water in the St. Lawrence, and by the working of the wheels.

As to the 1st and 2nd causes, nothing else can be said than that, in the present state of the works, they were beyond human control; but as to the third, some explanations are required in order to shew the difficulties attending the management of the Water Works in winter.

From what I have already said about the difficulties attending the working of the Wheels in former years, it is easy to understand that the troubles experienced this winter could not be less than heretofore.

A glance at the Schedule No. 2, shewing the daily levels of water for January, February and part of March, will be sufficient to shew that this winter the water has been a great deal lower than usual. At the end of December it was as low at 35.85 that is 0.15 below the level 36.00 which is the lowest to which the Breast Wheels were calculated to work at.

Experience has proved that when the Aqueduct is covered with ice this level is too low to drive more than one Breast Wheel, and that not even at full speed, if working under Reservoir pressure which is 82lbs. as indicated by the pressure gauge. During the two first weeks of January, the temperature stood remarkably low; on the 7th it was at a mean of 18° farht. below zero; this had the effect of thickening considerably the ice and also of reducing the head-water so much that on the 20th the Breast Wheels had to be stopped; the City had then to depend entirely for its daily supply upon the Turbine Wheel which yet could work. Several attempts were afterwards made to work the Breast Wheels, but without success, especially on the 25th day of the same month; one of the Breast Wheels was started with the regulating gate full open, but could not work the pumps more than 11 strokes a minute, at a pressure of 38lbs. only, so that it had to be stopped after half an hour's work, the speed of the Wheel being very irregular.

On the 3rd, 4th and 6th of February the Turbine had also to be stopped on account of the water in the St. Lawrence falling still lower. On the 4th it was as low as 35.45, the lowest water ever known since the erection of the Aqueduct.

On the 2nd of February, before the Turbine Wheel was stopped, the fall from the entrance to the Wheel-House was 2.54 feet, the head-water at Wheel-House being 33.56. The Turbine could have been worked with still a lower head of water as it has been since, but then it was thought advisable not to draw the water of the Aqueduct lower down on account of the ice which was already broken in the centre of the Aqeuduct. This ice in breaking takes the shape of an inverted arch which the least rise or fall of the water has a tendency to bring down more and more, especially if it is loaded with snow, and obstruct greatly the flow of water in the Aqueduct. This winter the rise and fall of the River St. Lawrence, whose water level has varied as much as 1.25 feet since the ice was formed over the Aqueduct, has helped greatly to break down this ice covering.

At the time of the stoppage of the Turbine, the McTavish Street Reservoir, which, when full, holds only 15 millions of gallons—that is, not more than three days' supply, was lowering very fast, and had to be kept shut off as a reserve against fires only; also the Cote à Baron Reservoir (which only holds four millions of gallons when full) was then exhausted by using it at night to keep the pipes full in the lower portion of the City, while the Wheels were kept pumping in the upper portion and into the McTavish Street Reservoir; so that by stopping the Wheels the City was left entirely without water. It was, therefore, through necessity, that afterwards the Turbine was worked with a lower head, at the risk of sinking the ice more and more into the Aqueduct.

Since the 7th of February, the supply of water to the Turbine has been so small that it could not be driven at its regular speed, and the City was left with a supply of about 2½ millions of gallons, which is all that could be pumped. Water carriers had to be employed to make up the deficiency and men were engaged to cut a channel through the ice of the Aqueduct.

Since the time that the entrance to the Aqueduct was deepened and enlarged no trouble was caused by anchor ice; it was, however, thought advisable to have it removed this winter; but this was found to have very little effect in improving the flow of water in the Aqueduct.

Also the attempt made to cut a channel through the ice of the Aqueduct, towards the end of February last, has not given much satisfaction, as can be seen by the levels of water of this month in Schedule No. 2. It will however, free the passage of water a few days sooner when the Spring thaw sets in.

In the beginning of March, levels of the water were taken simultaneously at different points in the Aqueduct with cross sections of the ice, in order to ascertain where were the obstructions.

These sections and levels, which are attached to this report, clearly indicate that the part of the Aqueduct, from the Wheel-House to the St. Pierre Bridge, was the most obstructed by the ice.

The first cross section above the stop-gates of the settling pond was taken at a point where the ice had been blasted a few days previously as an experiment. This blasting had the effect of bringing down the ice and of reducing considerably the water section of the Aqueduct. By referring to that section it will be seen that the water section is only 82.42 square feet, while all the others above as far as the Rock Gates, measure from 123 to 140 square feet; and the list of levels shewn along with these sections shews also that, on the 2nd of March, the fall of water from the St. Pierre Bridge to the settling pond (a distance of about 5,000 feet) was 2.39 feet, while from the Rock Gate to the St. Pierre Bridge, a distance of 10,500 feet, a little more than the double of the other, it was only 0.93 of a foot. From the above remarks it will be plainly seen that the falling of the ice on the Aqueduct was the only defect that could have been remedied or prevented to some extent. To have done so, it would have been necessary to keep the Wheels idle a great part of the time, and leave the City to be supplied entirely by puncheons—the Reservoirs not being large enough to contain a sufficient supply to allow the necessary stoppage of the Wheels.

The expenditure incurred by the embarrassment in the Aqueduct is as follows:—Cutting ice on Aqueduct $2,381.24; Watching and Carting water by puncheons $3,499.43; making a total $5,880.77.

I now come to the second part of my report:—

THE MEANS TO BE ADOPTED TO AVOID THE RECURRENCE OF A SIMILAR CALAMITY IN THE FUTURE.

Considering the present state of the Water Works as regards its efficiency and financial position, and also the importance of promptly remedying the difficulties affecting the supply of water in winter, the best plan to be adopted, in my opinion, is either to prevent the ice from forming over the Aqueduct, or to increase the pumping power by other means than by Water Wheels. Either of these plans can be executed during next summer.

One is to cover the Aqueduct, and the other to erect a Steam Engine. Each of these plans has its merits and its disadvantages.

A few considerations upon each project will show it.

The plan for covering the Aqueduct, I here submit with the estimate No. 1, is one that I cannot entirely approve of, and would not have mentioned it, had it not already attracted the attention of Your Committee. This is to cover the Aqueduct with boards supported by rafters, sleepers and posts, somewhat similar to the roof of a house. The total cost of the work according to this plan is $82,000. By what I have seen of Mill Races covered in this manner, I am satisfied that this mode of covering is sufficient to prevent the ice from forming on the Aqueduct, or at least from acquiring a great thickness, and to keep off the snow which tends to lower the ice. In this way a clear channel for water could be kept all winter. My objection to this plan is the mode of construction. There is some danger that the posts supporting the roof, will be disturbed, unless they are secured by strong braces, which would render the plan a good deal more expensive.

Should any ice be formed under the covering, which is not improbable, these posts cannot but be moved up and down by the rise and fall of this ice, caused by the fluctuation of the water, which cannot be controlled entirely. This would render a structure of such a temporary nature very expensive to keep in repair ; at least one per cent of the original cost, say about $800, which, with the interest of the primary cost at 8 per cent., would form a total of a yearly amount of $7,360.00 and then the work could not last more than ten or twelve years. The most effective covering in wood would be, in my opinion, one that would be supported on truss beams, thrown at 12 or 15 feet apart across the whole width of the Aqueduct, which is from the entrance to the Rock Gates on the average of 60 feet, and of 52 feet from the Rock Gates to the Settling Basin. But the cost of its execution which would be about $140,000 representing at 8 per cent. a yearly interest of $11,200 and the repairs, although in this case not so heavy as in the first plan, say about ½ per cent ($700.) would be, in my opinion, a sufficient objection to its adoption. By either of these plans the Aqueduct would still be affected by the lowness of the water at the entrance, which this winter stood several days below the level 36.00. At that level it is doubtful that the two breast wheels could be driven at their full speed under the Reservoir Pressure.

I now submit an estimate for the erection of a Steam Engine at the Wheel House.

The total cost of the estimate amounts to $67,200 which at 8 per cent represent a yearly interest of $5,376; by this plan I propose to erect along the N.W. side of the Settling Pond two high pressure Engines with four boilers of 150 horse power each, to work 2 pumps able to raise 4 millions of gallons daily to the Reservoir, each to be so connected that each Engine may work separately or simultaneously.

The advantage of these Engines is that they will be independent of the lowness of the water in the St. Lawrence, as also of the blocking of the Aqueduct with ice; because in that case no more water will be required from the Aqueduct than what goes through the Pumping Main and the supply to the boilers of the Engines, which, in all, is not more than one fifteenth of the water required to pump with Water Wheels.

By this means the Aqueduct will always be as efficient in the winter as in the summer.

The extra expenditure per day to run these Engines I calculate to be about $68.23.

In ordinary winters, 6 weeks of the working of the Engines will be about all that is required, say 42 days at $68.23, making a total of $2,866, which, added to the yearly interest of 8 per cent. of the primary cost of the Engines, forms a total of $8,242.

The cost of keeping these Engines at work should not be a sufficient objection to this project when all the advantages are considered.

The adoption of this plan will secure to the City an additional pumping power which could replace the Water Wheels at any time, should they give way by some unforeseen accident. The City having to depend entirely upon the working of the pumps for its supply cannot be too well protected upon that point, especially as there is so small storage in the Reservoirs.

The advantage of having two different motive powers is so well understood by the manufacturers on the Lachine Canal, that most of them have Steam Engines besides their Water Wheels; so that if the supply of water fails to drive their wheels they have Steam Engines to take the place. Indeed this winter it was well for them to be so provided, because the same difficulties which impaired the efficiency of the Aqueduct were also felt on the Lachine Canal. There also the Water Wheels were stopped for a great part of the winter, and Steam Engines had to be resorted to by those who had the good fortune to possess them.

Before closing my remarks on this project I have to answer a serious objection which might be made to the position of this Engine at the Wheel-House, and to the taking of the supply for the Pumps from the Aqueduct, instead of from a more independent source.

This objection certainly deserves consideration. My view in proposing this plan was only to create, at the cheapest cost and as speedily as possible, a temporary pumping power to help the wheels in winter; and if the supply to the pumps was to be got from another source than the Aqueduct, say, for instance, from the River St. Lawrence at the mouth of the Tail Race, which is the nearest source of pure water to the present Pumping Main, it would increase considerably the cost of the plan I here propose, and would render the completion of its execution very doubtful for next winter:

I have already shewn that an unfailing suppl water for the Pumps and Engines could be got in wi from the Aqueduct. The only time that any i venience might be felt would be in time of repairs to the Aqueduct, when it would become necessary to draw off the water for several days, or in case of its future enlargement; as to the repairs of the Aqueduct, when it will become necessary to draw off the water, they cannot be but of a very temporary nature, and would not require the water off for more than a few days. Enough water could be still left in it to supply the pumps of the Engine. But in case of an enlargement which, if made on a proper scale, I consider would be nearly as costly as a new Aqueduct, it would then require the water off the present Aqueduct for more than one season; then in that case the Steam Engine proposed would alone be too small to supply the City for such a length of time. This would render the advantage of its independence from the Aqueduct of small value, and to provide to-day for such an emergency, when it is uncertain that this enlargement shall be finally adopted, is perhaps, spending money that would be better applied afterwards.

For this reason, I propose to construct these works in such a manner that afterwards the Pumps could be adopted to Water Wheels should it be found necessary, and the Engines could be converted to low pressure Engines for Steam Navigation, so that very little loss would be incurred in that case.

Many plans to improve the Aqueduct have been suggested lately through the public papers, but none, in my opinion, could be adopted that would more promptly remedy our difficulties than the two proposed in this Report, especially the last one, which I consider the best and most efficacious.

I cannot conclude this Report, however, without bringing under the notice of Your Committee the importance of soon enlarging our Water Works. The plans proposed in this Report are, as I have already said, of a temporary nature, merely to supply the deficiency of the Aqueduct in winter, but the time is soon coming when the Water Committee must enlarge the works considerably to meet the demands of the City, which is increasing so rapidly every year.

When this Aqueduct was constructed, it was calculated for a supply of 5 millions of gallons, which was estimated at that time, by the consulting Engineers, sufficient for a population double of that of 12 years ago, which was estimated then at 60,000 inhabitants. To-day the population has nearly doubled that number, and the 5 millions of gallons are required.

By the erection of the new Turbine Wheel, when the Double Rising Main will be completed, the Pumping Power in summer will be sufficient to raise daily to the Reservoir a supply of 9 millions of gallons; but, in winter, on account of the difficulties in the Aqueduct, it will not be able to raise in its present state more than 3 millions of gallons under the most favorable circumstances, and with Steam Engines, as proposed, it may raise the five millions, which are already required by the City. It is, therefore, of the utmost importance that some additional means to supply the City with water should be soon adopted.

Large storing Reservoirs to receive the surplus water that the three wheels could pump during the summer season, would certainly be a great benefit to the City in winter by having on hand a large quantity of water to supply the defficiency of the Aqueduct during that time. This mode of enlarging the Water Works, although apparently very proper, has, however, a great many disadvantages.

The difficulties and the cost attending the construction of such Reservoir, which should hold at least 120 millions of gallons, and which, in order to maintain only one system of distribution, should be constructed on the same level as the present one, are such that it becomes very doubtful whether it should be the best plan to propose; principally when it is to be observed that this plan will not relieve the City from the necessity of increasing in a few years, and at a great cost, the Pumping Power, either by enlarging the present Aqueduct or by erecting Water Wheels at the foot of the Lachine Rapids, or by steam as it may be found best.

A Reservoir, however, of a similar capacity could be constructed a good deal cheaper at a lower level, but the system of distribution would require a great deal of alteration in order to divide it into a high and a low service to suit the Reservoirs. The cost and the permanent inconveniences caused by such a change, would render the lower level Reservoir very expensive also, and would not put the City in a better position than the high level Reservoir concerning the necessity of increasing Pumping Power.

I have attached to this report two estimates Nos. 2 and 3 of Reservoirs to be constructed on the Priests' Farm above Sherbrooke Street, West of the St. Sulpice Seminary College. Estimate No. 2 for a Reservoir at the same level as the present one amounts to $661,870. Estimate No.3 for a Reservoir at 35 feet lower amounts to $234,618. In this last estimate nothing is allowed for altering the system of distribution into two services.

The enlargement of the present Reservoir, at its present level is, in my opinion, the best course to adopt. Estimate No. 4 showing the cost of this enlargement, amounts to $188,830 with a total capacity of 36 millions gallons. With this enlargement other means should also be adopted to make early provision for an increase of the Pumping Power.

The project of placing the Pumps at the foot of the Lachine Rapids, as alluded to in Mr. Wickstead's observations upon Mr. Keefer's Report on the construction of the Water Works, seems to me a plan that ought to be well considered yet.

In finishing this report I have to apologize to Your Committee for having made these suggestions upon the future enlargement of the Water Works. My motive in doing it was to draw their attention to the heavy responsibility under which Your Committee and myself are placed; I beg also that you will not adopt any of these plans without consulting some eminent Engineers well acquainted with our winters.

I have the honor to be,
Gentlemen,
Your most obedient servant,

LOUIS LESAGE,
Superintendent of Water Works.

MONTREAL, *March*, 24*th*, 1866.

RKS.

ail Race, with the Depths of

ry.	1860 March.	1860 December.	186 Janua
85	693½	177½	
11½	50½	720	
96½	744	897½	1,
14	9 to 14	11 to 14	8 t
02	3,237,885	3,249,760	3,590,
64.	March 1864	Decr. 1864.	Jany.
49	263¼	366	
72¼	577½	729½	
21¼	840¾	1,095½	1
00	13.33	13.25	1
69	3,332,475	4,313,023	4,426
.	......	Total No. of Ho	
.	......	Average No. of	
.	......	Average No. of	
82	36.36	37.10	3
85	37.07	37.48	3
03	35.09	36.67	3
36	36.46	37.10	3
00	37.22	37.48	3
77	36.40	36.67	3
54	0.10	0.00	
43	36.87	38.25	3
00	37.32	39.20	3
87	36.55	36.77	3
61	0.51	1.15	
77	37.01	38.27	3
05	37.40	39.20	3
25	36.55	36.77	
95	0.65	1.17	
32	20.81	23.21	
00	24.00	24.00	
16	17.33	21.50	

ESTIMATE NO. 1,

For covering the Aqueduct with timber.

Principals every twelve feet; with a double row of posts. Rafters four feet apart, and inch board sheeting.

Quantities for 300 feet.

Upper Section, from entrance to the Rock Stop Gate, 60 feet wide; 11,000 feet long.

46,500 feet B. M. at	$18.00	$837.00
1,340 lbs. Nails and Spikes "	$4.00	$48.00
Total for 300 feet of covering		$885.00

Length of Section, 11,000 feet divided by 300' is equal to 36,66 lengths of 300 feet.

36,66 lengths at	$885.00	$32.444.10

Lower Section, from Rock Stop Gate to Wheel House, 52 feet wide, 16,000 feet long.

41,320 feet B. M. at	$18.00	$743.76
1,168 lbs. Nails and Spikes "	$4.00	42.00
Total for 300 feet		$785.76

Length of Section, 16,000 feet divided by 300' is equal to 53,33 lengths of 300 feet.

53.33 lengths at	$785.76	$ 41,904

Cost of Upper Section	$32,444
Cost of Lower Section	41,904
	$74,348
Add Contingencies 10 p. c.	7,434
TOTAL COST	$81,782

ESTIMATE NO. 2.

Cost of Proposed Reservoir, at the Priests' Farm, on the same Level as the McTavish Reservoir.

Capacity 136 Millions of Gallons.

Land required from the Seminary—	27.50	Acres
" " " Hon. L. H. Holton,	19.80	"
	47.30	Acres.

DESCRIPTION OF WORK.	QUANTITIES.		RATE.	Amount.
			$ c.	
Earth Excavation	Cubic Yds.	230,000	.25	57,500
Puddle in Embankment.........	"	107,000	.50	53,500
Embankment exclusive of Puddle.	"	600,000	.37½	225,000
Soiling and Sodding Slopes	Sqr. Yards.	50,000	.50	25,000
Pitching inside of Slopes........	Cubic Yds.	35,000	1.00	35,000
Masonry in Well, Overflow and Foundation of Valve House...	"	10,000	10.00	100,000
Superstructure of Valve House..	"	....	....	3,000
2 Sluice Gates..................	"	....	600.00	1,200
24-inch Main Pipes.............	Lineal Ft.	1,000	10.00	10,000
24-inch Stop Cock..............	"	1	....	500
Discharge Drain	"	500	10.00	5,000
				515,700
Contingencies 10 per cent.......	....	....	....	51,570
Land purchase, 47.30 acres at $2000	....	....	....	94,600
				$661,870

ESTIMATE No. 3.

Cost of a Reservoir at the Priest's Farm, at 35 feet lower than the present Reservoir.

Top Bank Level, 170 feet.
Bottom Bank " 145 "
Surface of Water " 165 "
Depth of " " 20 "
Capacity, 115,000,000 Imperial Gallons.
Land required from the Seminary, 24.81 Acres.
" " " Hon. L. H. Holton, 13.67 "

38½ Acres. 38.48 Acres.

DESCRIPTION OF WORK.	QUANTITIES.		RATE.	Amount.
			$ c.	$
Earth Excavation	Cubic Yds.	150,000	.30	45,000
Rock "	"	50,000	.80	40,000
Puddle in Embankment.........	"	28,500	.25	7,125
Pitching of Stone	"	47,000	.50	23,500
Masonry in Wells, Overflow, and Foundation of Valve House...	"	2,000	8.00	16,000
Superstructure of Valve House..	....	....	....	3,000
Sluice Gates		2	600.00	1,20
24-inch Main Pipe..............	Lineal Ft.	200	10.00	2,0 0
24-inch Stop Cock..............	....	1	500.00	50
Discharge Drain................	Lineal Ft.	500	10.00	5,0
				$143,3
Contingencies	....	....	....	14,33
				$157,658
Land Purchase.................	Acres.	38.48	2000.00	76,960
				$234,618

ESTIMATE NO. 4.

Estimate of McTavish Street Reservoir at its present elevation; to contain a total of 36,000,000 Gallons.

Rock Excavation	198,081	Cubic Yards,	at 0.75 cts.	$148.560
Masonry In retaining and Division Walls	4,600	"	" 4.00	18.400
Coping ditto.	213	"	" 8.00	1.704
Building for Guardian......................				4.000
				$171.664
Contingencies at 10 per cent..................................				17.166
				$188.830

ESTIMATE NO. 5.

For the Erection of Steam Engine, Boilers and Engine Houses and Wheel-House.

Two Horizontal High-pressure Engines, each able to be worked to 150 horse power with two vertical pumps, double action valves, on West & Harvey's principle, able to pump 4 millions of gallons of water into the Reservoir in 24 hours, with connecting rods, crank shaft, spur and driving wheels, &c. 4 Steam Boilers " Edwin Rose's Patent," all enclosed into a Brick Building with suitable stone foundations.

Engines, pumps, boilers, connections, driving and spur wheels, fly wheels, crank, and crank shaft, and all connections, steam pipes, &c.	$43.7
Building for do., and outside connections to Pumping Main.	23.5
	$67.

Expenses per day attending working of these Engines.

Same staff as at present..	
Coal, 13 Tons..............................at $5.00 per Ton.	$65.
Oil and Tallow	0.
Repairs	2.
	$68.

N. B.—This is computed at the rate of working only six w per annum.

ESTIMATE No. 6.

Expenditure incurred by the deficiency of the Water supply in February and March last:—

CUTTING A CHANNEL IN THE ICE OF THE AQUEDUCT.

Men's Wages from Feb'y 15th till March 22nd.	$1245.02½	
Soldiers' Wages and Refreshments...............	567.69	
Tools, Powder, India Rubber Bags, &c..........	216.60	
H. Woodman & Co., for cutting Ice, Tools, &c.	294.50	
Cab Hire	57.52½	
		$2381.

DISTRIBUTING WATER IN TOWN.

Men's Wages from February 22d till April 5th.	$2733.10	
Puncheons and Buckets	94.45	
Extra Watching at Reservoir, Valves and Fire Stations..	671.88	
		3499.
		$5880.77

ANNUAL REPORT

OF THE

SUPERINTENDENT

OF

THE MONTREAL WATER WORKS,

FOR THE

YEAR ENDING 31ST JANUARY, 1867.

PRINTED BY ORDER OF THE WATER COMMITTEE.

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ANNUAL REPORT

OF THE

SUPERINTENDENT OF THE MONTREAL WATER WORKS,

FOR THE YEAR ENDING JANUARY 31st, 1867.

To the Chairman and Members
Of the Water Committee,

GENTLEMEN,

I beg leave to submit my Annual Report for the year 1866:

AQUEDUCT.

The repairs done on the Aqueduct during the year, have been the cleaning of a portion of the Berm and side ditches, the filling up of a few ruts in the banks caused by the surface water, the repairing of farm bridges and fences, wherever it was found necessary.

During the summer I have taken cross sections of the Aqueduct, at every hundred feet apart, from the Settling Basin to the Stop Gates at the Rock Cut, with the view to ascertain the extent of the obstructions into the channel of the Aqueduct, caused by slides of the banks or otherwise; and to see also how far they might have been the cause of the difficulties experienced with the flow of the water into the Aqueduct every winter, since the beginning of its operation, especially last winter.

The following is a Schedule, shewing the area of the cross sections of the wetted perimeter :—

No. of Cross Sections.	No. of feet above Settling Pond.	Area of Cross Section in square feet.	No. of Cross Sections.	No. of feet above Settling Pond.	Area of Cross Section in square feet.
1	100	319.75	60	6,000	321.10
2	200	310.00	61	6,100	320.05
3	300	322.90	62	6,200	304.02
4	400	300.24	63	6,300	308.80
5	500	284.78	64	6,400	321.31
6	600	296.35	65	6,500	323.55
7	700	320.10	66	6,600	331.75
8	800	323.90	67	6,700	336.24
9	900	323.80	68	6.800	217.55
10	1,000	326.16	69	6,900	331.24
11	1,100	321.00	70	7,000	322.30
12	1,200	332.06	71	7.100	317.85
13	1,300	326.02	72	7,200	320.80
14	1,400	305.70	73	7,300	305.72
15	1,500	326.58	74	7,400	303.13
16	1,600	310.58	75	7,500	302.16
17	1,700	310.72	76	7,600	306.60
18	1,800	299.28	77	7,700	308.45
19	1,900	322.56	78	7,800	308.98
20	2,000	328.00	79	7,900	305.88
21	2,100	335.46	80	8,000	321.16
22	2,200	335.48	81	8,100	299.48
23	2,300	281.50	82	8,200	297.98
24	2,400	290.24	83	8,300	253.95
25	2,500	306.65	84	8,400	334.70
26	2,600	309.30	85	8,500	334.25
27	2,700	300.87	86	8,600	311.21
28	2,800	300.88	87	8,700	305.90
29	2.900	279.50	88	8,800	307.65
30	3,000	298.46	89	8,900	295.90
31	3,100	278.01	90	9,000	319.82
32	3,200	293.16	91	9,100	320.89
33	3,300	294.25	92	9,200	334.26
34	3,400	283.35	93	9,300	307.76
35	3,500	309.30	94	9,400	320 10
36	3,600	310.38	95	9,500	316.89
37	3,700	295.91	96	9,600	312.61
38	3,800	319.55	97	9,700	319.45
39	3,900	315.32	98	9,800	312.40
40	4,000	317.35	99	9,900	298.30
41	4,100	325.49	100	10,000	306.55
42	4,200	333·40	101	10,100	302.50
43	4,300	305.16	102	10,200	272.85
44	4,400	328.50	103	10,300	306.40
45	4,500	312.95	104	10,400	301.90
46	4,600	312.95	105	10,500	295.85
46½	4,650	307.80	106	10,600	305.05
47	4,700	307.60	107	10.700	281.26
48	4,800	294.81	108	10,800	290.65
49	4,900	310.28	109	10,900	299.35
50	5,000	310.95	110	11,000	294.54
51	5,100	303.15	111	11,100	296.04
52	5,200	303.58	112	11,200	294.05
53	5,300	322.00	113	11,300	294.69
54	5,400	299.78	114	11,400	282.09
55	5,500	315.08	115	11,500	283.80
56	5,600	322.16	116	11,600	271.57
57	5,700	319.39	117	11,700	269.15
58	5,800	329.66	118	11,800	284.80
59	5,900	324.35			

In this Schedule a great many of these Areas differ from each other, and also from the regular area, which should be 325 square feet. Most of these areas measure less; this is due to the slides in the banks which have taken place in the Aqueduct, especially at the commencement of its operation. Since that time some of the stone lining at the level of the water has been every year more or less disturbed by the ice, but not to such an extent as to impair materially the flow of water.

I have ordered, at the beginning of this winter, the Stop Logs of the Gates at the Rock Cut to be taken out, as an experiment, so as to give the Aqueduct its full sectional area, and left the water level to be regulated by the Waste Weir at the Wheel House.

By this means the water level has been regulated very satisfactorily, although in the River St. Lawrence, at the entrance of Aqueduct, its level has varied as much as three feet since the beginning of the cold weather; there is every probability that very little trouble will be experienced this season, especially, as the head of water is two feet higher this year than it was last year at the same date; and also a greater attention is paid to the level of water this winter, by the Engineer in charge at the Wheel House.

This latter part of the work is, however, accomplished with a good deal of difficulty, the result of the following inconveniences. In the first place, the Sluice Gates at the Wheel House, used to regulate the level of water, as above mentioned, are very much exposed to the frost, so that it is difficult to use them in winter, at which time they are most required—and it is only by keeping men employed to clear the ice from them, that they can be used, and then even with some difficulty.

To remedy this, I recommend that a proper covering be put over them, so as to protect at all times their working from the action of the frost.

This would also obviate the expense of cutting the ice round them.

Another draw back, is the want of a rapid communication from the entrance of the Aqueduct to the Wheel House, so as to insure more effectually the proper control of the water level, and by that avoid many of the difficulties which otherwise would be unavoidable. I recommend, therefore, that the Telegraph wire be extended from the Stop Gates at the Rock Cut, to the entrance of the Aqueduct, where another instrument should be placed, to communicate with the Wheel House. This expense would be very little, compared with the benefits resulting from it.

Several of the Farm Bridges on the Aqueduct, require repairs, and new flooring. The first one from the entrance at Dumbary's farm, wants to be renewed entirely, it is now unsafe. [A new Bridge has been since ordered by your Committee.]

The expenditure on the Aqueduct this year, is as follows:—

Repairs to Fences, Bridges, Ditches, &c..........	$ 496.86
Cutting Ice..	2419.74
Keeper's salary..	375.00
	$3291.60

WHEEL-HOUSE.

All the Repairs to the Wheel-House contemplated in my last year's Report have been done. The Breast Wheels and Pumps, which had been at work for ten years, without any important repairs, have béen improved and repaired as follows:—

The bottoms of the old Air Vessels which were leaking for many years have been renewed, and two new Check Valves on the delivery main were put in place of the old ones. The six Pumps which were getting loose at the foundation plate, have been rendered more steady by bolting them to a strong cast iron beam, which extends the whole length of the Pump's pit. All the small pumps employed to pump the leakeage of the old Air Vessels have been removed, leaving only the small Turbine Wheel to pump the leakage coming through the walls of the Pump's pit. The Pumps attached to this Wheel were also temporarily removed to make room for the air Vessels, whose bottoms had to be taken out and new ones introduced in the Pump's room by an opening made purposely through the wall of the building. In the mean while, in order to get rid of the leakage, a suction cast iron pipe was laid from the Pump's room to the Wheel pit of the new Wheel-House, and connected to the Pumps of the other small Turbine Wheel, which performed the work of pumping during the repairs.

Two new wrought iron Crank Shafts imported from England have been put in place of the old ones.

The Machinery to stop and start the Breast Wheels, is now moved by small water Wheels, instead of by hand as before, and each Breast Wheel with their Pumps have been rendered independent of each other, first, by the introduction of the new check Valves in place of the old ones, as mentioned above, and by attaching to each Air Vessel a Balance Valve to act as a regulator of the pressure in starting or stopping each Wheel, so that the two Breast Wheels can be started or stopped independent of each other, and that by one man only, instead of three as before.

A new cast iron Floor and Stairs have replaced the wooden Floor and Stairs over the Pump's pit. A cast iron Beam has been laid across and under the Beams supporting the two Crank Shafts, so as to prevent the vibration that was experienced before.

New automatic Air Pumps have been attached to the Air Vessels, in order to keep them constantly supplied with air.

These instruments are remarkable for their simplicity and efficacity, and are worked upon the well known principle of the equilibrium of fluids. They are the invention of Thos. Walsh, who has been superintending these repairs, and who has been since permanently appointed the first Engineer over the Pumping Machinery at the Wheel House. Most of these repairs have been done by J. McDougall, who had a contract with the Corporation to that effect.

While the work was going on, the supply of water to the City was pumped by the Turbine Wheel, the only pumping machinery then available for the purpose. This Wheel, up to last Spring, owing to the jar and shock of the building, caused by the construction of the valves of the Pumps, could not be worked with safety beyond 10 revolutions, at which speed it could only pump about 3,400,000 galls. in the 24 hours. Various improvements have been made to these Valves and also to the Pilow Blocks of the Centre Shaft, so that now a speed of sixteen revolutions can be obtained; that is four more than were first calculated on, without any of the shocks that were felt before. At the speed of 16 revolutions, the Pumps are able to deliver 5,350,000 Gallons in the Reservoir per 24 hours.

By this means, the full supply of water could be allowed to the City, while the Breast Wheels were getting repaired.

The Turbine Wheel has been constantly at work from the 28th of August last till the 12th of December.

The advantage of this Wheel over the Breast Wheel has been well demonstrated this winter. When the ice has formed over the Aqueduct, the water is so reduced that ordinarily it is not sufficient to drive the two Breast Wheels when under the Reservoir pressure, and is too much for one of these wheels alone. The Turbine as at present improved is just calculated to the capacity of the Aqueduct in winter, and consequently utilizes the water power to a better advantage.

It is for this reason that, since the end of December it has alone supplied the City with water up to date, although the two Breast Wheels were in thorough repair.

The following tables show the duty of each wheel and the amount of Oil, Tallow, &c., used in the works during the year :—

Schedule Showing the duty of Turbine Wheel.

MONTH.	Revolutions.	Number of Gallons Pumped.	Olive oil in Gallons.	Tallow in Lbs.	Coal oil in galls.	Coal for Fuel in lbs.
1866.						
February	206,709	53,330,922	11.15	6.00	7.98	7,304
March	297,092	76,649,736	15.52	11.08	10.44	7,568
April	82,995	21,412,710	4 48	4.02	1.69	5,500
May	....	....	....	....	....	....
June	228,395	58,925,910	11.00	2.00	2.09	....
July	232,656	60,025,248	9.57	5.12	3.23	....
August	227,359	58,658,622	10.29	2.14	4.18	....
September	637,000	164,346,000	24.29	24.00	8.87	....
October	656,058	169,262,964	21.77	6.00	10.77	756
November	654,114	168,761,412	24.56	4.08	24.95	5,154
December	349,455	90,159,390	10.86	6.06	6.34	6,746
1867.						
January	290,681	74,995,698	10.37	15 08	7.00	7,560
Total	3,862,514	996,528,612	153.86	88.10	87.54	40,588
Last Year	....	142,061,390	34.80	11.09	13.97	15,612

Schedule Showing the duty of the Two Breast Wheels.

MONTH.	Revolutions. Wheel No. 1.	Revolutions. Wheel No. 2.	Total No. of Revolutions.	Number of Gallons Pumped.	Olive Oil in Gallons	Tallow in lbs.	Coal Oil in Gallons	Coal for Fuel in lbs.
1866.								
February		59,620	59,620	8,823,760	2.04	1.4	5.41	15,250
March	10,130	8,733	18,863	2,791,724	0.13	......	4.84	10,355
April	368,256	407,008	775,264	114,739,072	10.19	8.6	8.14	8,015
May	615,875	334,721	950,596	140,688,306	12.13	5.0	7.89	3,496
June	295,001	261,206	556,207	82,318,685	10.76	......	7.22	528
July	410,979	375,395	786,374	116,383,352	15.84	4.0	6.43	....
August	341,730	443,259	784,989	116.178,372	9.12	......	7.62	....
September	....	....	....	....	......	......	......	....
October	....	....	....	....	......	......	......	....
November	....	....	....	....	......	......	......	3,778
December	262,274	352,662	614,936	91,010,528	16.14	......	8.81	6,160
1867.								
January	242,940	357,641	600,581	88,885,988	14.49	4.0	8.29	7,376
Total	2,547,185	2,600,245	5,147,430	761,819,787	90.84	22.10	64.65	54,958
Last Year	4,898,195	4,273,664	9,171.859	1,407,880,353	113.33	267.06	120.20	99,366

The roof of the old Wheel-House which was leaking badly, has been covered anew with Canada Iron Plates, and painted to two coats of oxide of iron, and that of the new Wheel-House has also been painted to one coat, so that the whole of these roofs are now of the same color.

The interior of the old building with the Breast-Wheels and Machinery has also been painted afresh.

Five new dwellings for the men employed at the Wheel-House are expected to be erected early this spring.

The floor of the bridge over the Waste-Weir has been renewed by a 4-inch Tamarack planking.

The ground round the Wheel-House bas been planted with trees. A flag-staff 75 feet high has also been erected at the N. W. end of the Wheel-House.

Every year your Committee has had to pay a good deal of money to the Machine Shops of the city for repairs to machinery, and often the works have had to suffer by delays and inconvenience caused by the isolation of the Wheel-House from these Machine Shops. I believe a great deal of these expenses could be avoided by having the work done by our own men at the Wheel-House. For this purpose I would recommend to erect over the Waste Weir at the South East end of the Wheel-House a work Shop, with planing, boring and turning machines, which could be worked by a small turbine wheel also to be erected for the purpose.

This new building would also afford the necessary protection to the Sluices of the Waste Weir against the frost in winter; at which time it is, as I have already stated, of a great importance to have them ready for action at a moment's notice. I hope your Committee will take this subject into consideration as soon as possible.

The expenditure incurred at the Wheel-House during the year is as follows :—

Repairs to Breast-Wheels	$17,381·95
" " Turbine Wheel	2,780.12
" " Roof, Floors, &c	692.93
" " Machinery, &c	553.70
Paid Police for watching Works during the Fenian invasion	114.00
Fuel, Olive and Coal Oil, Cotton Waste, &c...	806.40
Staff Salaries	2,619.06
	$24,948.16

TAIL RACE.

Nothing but the ordinary repairs have been done on the Tail Race during the year, such as repairing banks, cleaning ditches and fixing fences. Last spring a small leak through the South West bank around the masonry of the discharge of the St. Pierre River was discovered in time and repaired without any great damage. The oak Cap of the dam which had been displaced by the ice, was altered and put in place.

The expenditure on the Tail Race during the year is as follows :—

Repairs to Fences, Dams and Banks......	256.16
Keepers' Salary..................................	243.00
	$499 16

RISING MAIN.

The 24-inch cast iron pipes contracted for by D. Y. Stewart & Co., of Glasgow, Great Britain, have all been received and deposited along the line of the pipe track ready to be laid next summer. These pipes might have been laid last summer, but the apprehension of the Asiatic cholera in this country, and also of the troubles caused by the attempted invasion of Canada by the Fenians, the consequence of which appeared to enhance greatly the value of labor, induced your Committee to postpone this part of the work. Now that a better state of things appears to show itself for next spring, I hope your Committee will not lose time in having the work commenced.

The whole of the lead to connect these pipes together has been bought at a very reduced price. The second line of the rising main, from the back of the McGill College to the Reservoir, has been laid last fall, and a Tunnel under the road in front of the Banks of Reservoir to give a better access to the rising main at that place, has also been commenced and partly finished.

This part of the work which required a good deal of care and attention so as to not cause damage to the property through which it had to be executed, was done by days work under the immediate control of your Committee.

The present stone drain, coming from the valve well of the Reservoir, has been connected to University Street main sewer by a 2-feet barrel brick drain, 230 feet long.

The fences along the line of the Rising Main from St. Joseph Street to Dorchester Street are in bad order in several places, and would require the constant attendance of a guardian to keep them in repair, and prevent the trespasses committed by the people frequenting the locality.

The state of the water course passing on the line of the Rising Main at Dorchester Street and entering the property of the late Hon. Quesnel, a little below that street, is still the same.

Some plan should be soon adopted to put this creek in such a condition so as to cause no damage.

The expenditure on the Rising Main is as follows:

D. Y. Stewart & Co., for Pipes	$38,130.70
Victor Hudon, for Lead	2,646.42
Sundries	599.39
Mens' Wages	1,920.76
	$43,297.27

RESERVOIRS.

The McTavish Street Reservoir is in good working order. The roof and inside of the Valve House have been repaired and painted afresh, also the iron railing round the walls. The dry stone wall covering the front slope of the Reservoir has subsided in several places, but not to such an extent as to injure the work. It will be well, however, to have it repaired during the coming summer.

The extension of this Reservoir is progressing with little more activity than last year. A contract for the extraction of 10,000 toises of stones for the Road Department has been entered into with Mr. Bogue, in October last, and has to be finished by October next. Up to date 2,000 toises have already been taken out.

A question having been raised by Alderman David, as to the expediency of raising the walls of this reservoir ten feet higher, I was ordered by your Committee to report upon the project.

I have made the report which I have the honor to submit at the same time with my annual report.

The expense at McTavish Street Reservoir is as follows :—

Repairs to roof of Valve House........$	329.41
Repairs to Fences and planting Trees	26.55
Fuel..........	84.78
Sundries.........	29.15
Keepers' Salary.......	475.00
	$944.89
Extension of the Reservoir..............	11.015.41
	$11.960.30

Nothing has been done to the Coteau Baron Reservoir. The fences require a little repair and also the Keeper's house, which is in a bad condition.

This Reservoir is used from time to time to keep the City Mains full of water when it becomes necessary to shut the McTavish Street Reservoir off the City; principally in winter when the supply is curtailed at night by the low water and the ice in the Aqueduct.

This Reservoir is now very useful and would be still more so if it was of a larger capacity. I have, in the report above mentioned, alluded to this subject.

The following is a Schedule shewing the level of Water, the Rain and Evaporation at the McTavish Street Reservoir, for 1866:—

MONTH.	Average Monthly Depth.	RAIN GUAGE.				Evaporation in inches.
		Rain.	Snow.	Reduced to Rain.	Total Rain.	
		inches.	inches.	inches.	inches.	
February.......	11.67	0.27	8	0.78	1.05	1.35
March..........	5.52	0.80	9¾	1.19	1.99	1.15
April....... ...	16.89	2.80	....	....	2.80	2.35
May............	22.54	3.36	....	....	3.36	3.30
June...........	22.13	5.76	....	....	5.76	4.51
July	21.28	4.52	....	....	4.52	5.16
August.........	22.22	4.13	....	....	4.13	4.12
September	22.28	5.57	....	....	5.57	2.97
October	22.10	3.30	½	0.10	3.40	2.74
November......	21.01	4.62	....	....	4.62	2.67
December	20.68	0.79	12¾	0.81	1.60	1.61
1867.						
January	20.64	....	15½	1.36	1.36	2.65
Total....	....	35.92	46½	4.24	40.16	34.58
In 1865.........	....	19.84½	59½	8.36	28.20½	35.82

PIPE LAYING.

The total length of cast iron Main Distribution Pipes laid in the City during the year 1866 amounts to 3781 lineal feet, that is 300 feet of 6-inch pipe, 3481 feet of 4-inch pipe, 1 stop cock of 6-inch, 4 of 4-inch and one fire Hydrant. There has been also 252 Service Lead Pipes laid to new dwellings.

The total of cast iron pipes laid in the City up to date as shown by the following schedules is 18199 feet of 24-inch, 2650 of 16-inch, 14,384 of 12-inch, 34,070 of 10-inch, 7,460 of 8-inch, 128,672 of 6-inch, 244,064 of 4-inch cast iron pipes, with 3,185 lead main pipes, forming a total of 452,684 lineal feet of main pipes, or 85.75 miles nearly.

There are now laid 14 twenty-four inch, 3 sixteen inch, 21 twelve inch, 32 ten inch, 9 eight inch, 139 six inch, 371 four inch, and 32 two and a-half inch Stop Cocks, making a total of 622. There are 563 fire Hydrants including 31 private ones.

The total number of houses supplied with water is 12,353.

There is on hand as seen by inventory 1,882 feet of 6-inch pipes and 3,123 feet of 4-inch pipes which were imported from Glasgow, and which are ready to be laid wherever it will be found advantageous by your Committee.

None of the ten inch pipes recommended in my last report to be laid in St. James, St. Francois Xavier, St. Peter and St. Sacrament Streets have been yet ordered. Their amount is 4,025 lineal feet. This delay may be attributed to the same causes which have delayed the Rising Main.

I hope steps will be taken to procure these pipes during the course of next summer.

The expenditure on pipe laying has been as follows :

Cast Iron Works	$ 7,979.74
Lead Pipes and Brass Works	4,388.40
Sundries.	463.03
Wages	3.354.81
	$16,185.98

SCHEDULE showing the Pipes, Hydrants, Stop-Cocks, Services, &c., laid down in the City of Montreal during the year 1866:—

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe in feet.	Weight of Lead Pipe in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
EAST WARD.												
Jacques Cartier S.	....	......	......	....	....	....	..	1	....	11	35	....
Champ de Mars	....	......	......	....	....	....	..	....	2	55	174	2
St. Paul	....	......	......	....	....	....	..	....	1	22	69	1
Victor	....	195	195	....	1	1	..	1	....	9	28	....
Total	....	195	195	....	1	1	..	2	3	97	306	3
CENTRE WARD.												
Craig	....	......	......	....	....	....	..	....	2	78	247	2
Hospital	....	......	......	....	....	....	..	....	1	13	41	1
Fortification	....	......	......	....	....	....	..	....	3	75	238	5
Notre Dame	....	......	......	....	....	....	..	....	3	114	362	5
St. Sulpice	....	......	......	....	....	....	..	....	1	26	82	1
St. Lambert	....	......	......	....	....	....	..	....	4	198	627	6
Commissioners	....	......	......	....	....	....	..	....	2	39½	124	3
Little St. James	....	......	......	....	....	....	..	....	1	16	51	1
Total	....	......	......	....	....	....	..	....	17	559½	1772	24
WEST WARD.												
Victoria Square	....	......	......	....	....	....	..	....	....	6	19	....
St. Frs. Xavier	....	......	......	....	....	....	..	....	....	13	41	....
St. John	....	......	......	....	....	....	..	....	1	23	73	1
Notre Dame	....	......	......	....	....	....	..	....	4	323	1024	12
Great St. James	....	......	......	....	....	....	..	....	2	75	238	2
Foundling	....	......	......	....	....	....	..	....	1	20	63	1
Fortification	....	......	......	....	....	....	..	....	2	43	136	2
Lemoine	....	......	......	....	....	....	..	....	2	34	108	1
Total	....	......	......	....	....	....	..	....	12	537	1702	19
ST. ANN'S WARD.												
Dalhousie	....	......	......	....	....	....	..	....	3	98½	312	4
Grey Nun	....	......	......	....	....	....	..	....	1	24	112	1
William	....	......	......	....	....	....	..	....	3	153	485	3
Forfar	....	......	......	....	....	....	..	....	3	121	384	3
Centre	....	......	......	....	....	....	..	....	2	146	463	2
St. Magdelen	....	......	......	....	....	....	..	....	1	40	127	1
Prince	....	......	......	....	....	....	..	....	2	60	190	2
Murray	....	......	......	....	....	....	..	....	1	18	57	1
Queen	....	......	......	....	....	....	..	....	2	60	190	2
Wellington	....	......	......	....	....	....	..	....	5	141	447	5
College	....	......	......	....	....	....	..	....	2	119	521	3
Richmond	....	320	320	....	....	....	..	....	4	63½	201	5
Duke	....	......	......	....	....	....	..	....	1	25	79	1
Olier	....	......	......	....	....	....	..	....	1	26½	84	2
Total	....	320	320	....	....	....	..	....	31	1095½	3652	35

SCHEDULE shewing the Pipes &c., laid down.—(Continued.)

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe in feet.	Weight of Lead Pipe in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
ST. ANTOINE WARD												
Richmond Square	....	......	......	....	....	....	..	....	....	4	14	2
Craig	....	......	......	....	....	....	..	....	2	47	149	2
Inspector	....	......	......	....	....	....	..	....	1	30	95	1
Cemetery	....	......	......	....	....	....	..	....	1	53	168	1
Canning	....	......	......	....	....	....	..	....	1	37	117	1
Lagauchetiere	....	......	......	....	....	....	..	....	....	10	32	1
Scotland	....	......	......	....	....	....	..	....	5	183	579	5
Cathcart	....	......	......	....	....	....	..	....	2	53½	170	3
University	....	......	......	....	....	....	..	....	7	349½	1105	8
Victoria	....	210	210	....	....	....	..	....	11	444	1406	11
Mansfield	....	......	......	....	....	....	..	....	2	182	577	3
Latour	....	......	......	....	....	....	..	....	1	30	95	2
St. Bonaventure	....	......	......	....	....	....	..	....	10	640	2225	18
Chatham	....	......	......	....	....	....	..	....	3	49	155	3
Chaboillez	....	......	......	....	....	....	..	....	2	54½	173	3
St. Monique	....	......	......	....	....	....	..	....	1	38½	122	2
Versailles	....	......	......	....	....	....	..	....	1	26	82	1
Sherbrooke	....	......	......	....	....	....	..	....	2	109	345	2
St. Antoine	....	......	......	....	....	....	..	....	3	93	295	3
Mountain	....	......	......	....	....	....	..	....	3	103	326	3
St. Joseph	....	......	......	....	....	....	..	....	....	22	69	1
Union Avenue	....	......	......	....	....	....	..	....	3	148	468	3
Seigneurs	....	......	......	....	....	....	..	....	1	43	136	1
Simpson	....	557	557	....	1	1	..	1	3	99	314	3
Dorchester	....	......	......	....	....	....	..	....	2	101	320	2
St. Catherine	....	......	......	....	....	....	..	....	1	61	193	1
St. Martin	....	......	......	....	....	....	..	....	1	32	101	1
Workman	....	45	45	....	....	....	..	....	2	32	101	2
St. Margaret	....	39	39	....	....	....	..	....	....	22	70	2
Total	....	851	851	....	1	1	..	1	71	3096	10002	91
ST. LAWRENCE WD.												
St. Catherine	....	......	......	....	....	....	..	....	4	205	649	5
Craig	....	......	......	....	....	....	..	....	1	32	101	1
St. Alexander	....	......	......	....	....	....	..	....	1	14	44	1
Anderson	....	211	211	....	....	....	..	....	3	58	183	3
Balmoral	....	......	......	....	....	....	..	....	1	18	57	1
Mance	300	......	300	1	....	1	..	1	2	34	108	2
St. Chs. Barromée	....	......	......	....	....	....	..	....	3	91	288	3
Lagauchetiere	....	......	......	....	....	....	..	....	1	25	117	1
St. Urbain	....	......	......	....	....	....	..	....	1	23	73	1
Devienne	....	......	......	....	....	....	..	....	1	18	57	1
St. Lawrence	....	......	......	....	....	....	..	....	5	189	598	6
Dorchester	....	......	......	....	....	....	..	....	1	36	114	1
Bleury	....	......	......	....	....	....	..	....	6	252	797	7
Total	300	211	511	1	....	1	..	1	30	995	3186	33

SCHEDULE shewing the Pipes &c. laid down—(Continued.)

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Supplied. Houses	Length of Lead Pipe in feet.	Weight of Lead Pipe in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
ST. LEWIS WARD.												
Craig	....	......	......	....	....	....	..	....	2	56	177	2
St. Denis	....	......	......	....	....	....	..	....	2	214½	678	3
Cadieux	....	......	......	....	....	....	..	....	1	33	105	1
St. Dominique	....	......	......	....	....	....	..	....	4	137	434	4
German	....	......	......	....	....	....	..	....	3	69½	220	4
Dorchester	....	......	......	....	....	....	..	....	1	58	242	1
Sanguinet	....	128	128	....	....	....	..	....	4	113	358	4
St. Elizabeth	....	......	......	....	....	....	..	....	2	42	133	2
Courvil	....	......	......	....	....	....	..	....	2	194	614	2
St. Lawrence	....	......	......	....	....	....	..	....	3	76	240	3
St. Constant	....	......	......	....	....	....	..	....	1	18	57	1
Fortier	....	404	404	....	....	....	..	....	2	25	79	2
Ontario	....	......	......	....	....	....	..	....	4	361	1143	6
Total	....	532	532	....	....	....	..	....	31	1397	4480	35
ST. JAMES WARD.												
St. André	....	......	......	....	....	....	..	....	....	29	92	....
Lagauchetiere	....	......	......	....	....	....	..	....	2	42	134	1
Amherst	....	459	459	....	....	....	1	1	5	130	412	5
Robin Lane	....	......	......	....	....	....	..	....	1	23	73	1
Visitation	....	......	......	....	....	....	..	....	3	187	329	3
Craig	....	......	......	....	....	....	..	....	2	48	155	2
Campeau	....	......	......	....	....	....	..	....	1	30	95	1
St. Denis	....	......	......	....	....	....	..	....	1	51	162	1
Dubord	....	332	332	....	1	1	..	1	2	72	229	2
Montcalm	....	......	......	....	....	....	..	....	5	93	294	5
Jacques Cartier St	....	344	344	....	....	....	..	....	6	170	539	6
Beaudry	....	......	......	....	....	....	..	....	4	144	456	4
Mignonne	....	......	......	....	....	....	..	....	2	104	329	2
Wolfe	....	......	......	....	....	....	..	....	1	15	48	1
St. Catherine	....	......	......	....	....	....	..	....	4	111	352	4
Berry	....	......	......	....	....	....	..	....	4	173	547	4
Total	....	1135	1135	....	1	1	1	2	43	1342	4246	42
ST. MARY'S WARD.												
Fullum	....	......	......	....	....	....	..	....	1	58	184	5
Visitation	....	......	......	....	....	....	..	....	1	32	92	1
Voltigeurs	....	......	......	....	....	....	..	....	1	10	32	1
Dorchester	....	......	......	....	....	....	..	....	1	34	108	1
Lane off Mignone	....	......	......	....	....	....	..	....	3	57	181	3
Papineau	....	......	......	....	....	....	..	....	1	24	76	1
Dufresne	....	......	......	....	....	....	..	....	5	156	486	5
Shaw	....	......	......	....	....	....	..	....	1	34	108	1
Total	....	......	......	....	....	....	.	....	14	405	1267	14
Grand Total	300	3244	3544	1	3	4	1	6	252	9524	30613	296
Grand Trunk R.R. St. Bonaventure S	....	237	237	....	1	1	..	1	....	......	......	....
Grand Total.	*300*	3481	3781	1	4	5	1	7	252	9524	30613	296

Schedule shewing the Pipes, Hydrants, and Stop Cocks laid down, and the number of Houses supplied with water, in the City of Montreal, up to January, 1867.

Names of Wards.	Length of Main Pipes in Feet.								Total Length of Main Pipes	Number of Stop Cocks.									Hy- drants.		Brick Chambers.	Houses Supplied.
	24 in.	16 inch	12 in.	10 in.	8 in.	6 inch	4 inch.	Lead		24 in	16 in	12 in	10 in	8 in	6 in.	4 in.	2½ in.	To'l No.	Pri- vate	Pub lic.		
East	......	....	......	3270	470	5140	6855	380	16115	..	..	..	6	..	6	18	3	33	....	30	61	566
Centre	......	....	......	1272	....	4426	6382	850	12930	..	..	..	1	..	5	16	2	24	2	25	49	419
West	......	630	965	1158	600	4905	8614	430	17302	..	1	2	1	1	7	21	3	36	....	33	66	594
St. Ann's	......	....	6577	1712	620	30834	45457	160	85360	..	..	7	2	1	32	70	1	113	10	100	222	1942
St. Antoine	1060	2020	6818	2478	900	27015	64539	360	105190	2	1	10	4	3	29	88	11	148	....	108	245	2329
St. Lawrence	......	....	......	5562	3250	9343	26926	360	45441	..	..	..	3	3	12	46	5	69	....	56	119	1816
St. Lewis	......	....	......	7917	1620	8592	25921	280	44330	..	..	..	5	1	9	34	5	54	....	61	110	1732
St. James	......	....	......	4778	....	15511	33565½	150	54004¼	..	..	..	4	..	16	41	..	62	....	56	117	1648
St. Mary's	......	....	......	5923	....	20508	19232½	215	45878½	..	..	..	6	..	20	29	2	57	4	63	122	1302
Total	1060	2650	14360	34070	7460	126274	237492	3185	426551	2	2	19	32	9	136	363	32	596	16	532	1111	12350
Rising Main	17139	....	24	......	....	15	....	....	17178	12	1	2	..	..	1	....	..	16	....	....	16	3
Grand Trunk R.R., Pt. St. Charles	......	....	......	......	....	2383	2728	....	5111	..	..	..	..	..	2	3	..	5	10	....	15	......
Montreal City Pass. R. R. Co., St Mary st.	......	....	......	......	....	......	1015	....	1015	..	..	..	..	..	....	1	..	1	1	....	2	......
Military Government, at Hochelaga	......	....	......	......	....	......	2180	....	2180	..	..	..	..	..	....	1	..	1	1	....	2	......
Grand Trunk R.R., St. Bonaventure Street	......	....	......	......	....	......	545	....	545	..	..	..	..	..	....	2	..	2	2	....	4	......
Canadian Rubber Co., St. Mary Street	......	....	......	......	....	......	104	....	104	..	..	..	..	..	....	1	..	1	1	....	2	......
Total	18199	2650	14,384	34070	7460	128672	244064	3185	452684	14	3	21	32	9	139	371	32	622	31	532	1152	12353

REPAIRS.

The repairs to main pipes are shown in the Schedule below.

There has been 21 breaks and 22 leaks to Main Pipes, making in all 43 against 35 last year. These leaks, and especially the breaks, as may be seen, are greatly due to the excavations that were made in many of the streets by the contractors for the drains and sewers; when the drains will be laid generally all through the streets of the city, it is expected that the proportion of the breaks and leaks will be greatly lessened.

SCHEDULE shewing the Repairs done to Main Pipes, Hydrants & Stop Cocks, during the year 1866.

POSITION	DATE. 1866	DIAMETER.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF INJURY.
Delisle	Feb'y 14	4 in.	1	..	Put in a new piece of pipe	Filling not properly packed.
Victoria	March 12	4 in.	1	..	Do	Do.
Lusignan	" 17	4 in.	1	..	Do	Do.
Craig and Papineau	" 20	6 in.	..	1	Recaulked the joint	Not well caulked.
Wellington and St. Etienne	" 31	4 in.	1	..	Put on a sleave	Broken across by settlement of earth.
St. Alexis	May 31	4 in.	1	..	Put in a new piece of pipe	A hole in the pipe.
St. Pierre, off Mignonne	June 2	4 in.	..	1	Recaulked the joint	Not well caulked.
William	"	6 in.	1	..	Put on a cap	By the settling of earth on tunnel work
Do.	July	4 in.	1	..		Do.
Bonaventure	"	4 in.	1	..	Put in a piece.	Split by defect in casting.
Desrivieres	"	4 in.	1	..	Do	Broken across on a stick of timber.
St. Felix	August	4 in.	1	..	Do	By driving a pile on it.
McCord	"	12 in.	..	1	Put in a new joint	Joint badly made.
William	"	6 in.	1	..	Put on a cap	A split in pipe.
McCord	Octbr 1	12 in.	..	2	Recaulked the joint	Joint badly made.
Rolland	" 7	4 in.	..	1	Do	Do.
Dorchester	" 16	10 in.	..	1	Do	Do.
Chatham	" 21	4 in.	..	1	Do	Do.
College	" 24	4 in.	1	..	Put on a cap	By the settling of earth of tunnel work
Bonaventure	" 31	4 in.	..	1	Put in a new joint	Joint badly made.
McCord	Novbr 5	12 in.	..	1	Recaulked the joint	Do.
Wellington	" 6	12 in.	..	2	Do	Do.
Carried over			12	12		

SCHEDULE shewing repairs done to Main Pipes &c.—(*Continued.*)

POSITION.	DATE. 1866	DIAMETER.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF INJURY.
Brought forward......	....	......	12	12		
Amherst and Mignonne......	Novbr 14	6 in.	1	..	Put in a new piece of pipe	By the settling of earth on tunnel work
St. Andre and do	"	4 in.	1	..	Do	Do.
William....................	"	6 in.	2	..	Put on 3 caps	Do.
Chaboillez	" 17	4 in.	1	..	Put in a new piece of pipe	Do.
St. Andre and St. Catherine...	" "	4 in.	1	..	Do	Do.
Wellington	" 28	12 in.	..	2	Recaulked the joint	Joint badly made.
McGill	" "	6 in.	..	1	Do	Do.
St. Elizabeth	" "	4 in.	1	..	Put in a piece of pipe	Broken by the excavation made near it.
St. Catherine (St. Lewis W.)..	" "	6 in.	..	1	Recaulked the joint	Joint badly made.
Wellington	" 29	12 in.	..	1	Do	Do.
Do.	Dec. 12	......	..	2	Do	Do.
McCord....................	" 12	......	..	2	Do	Do.
William	" 12	6 in.	1	..	Put in a new piece of pipe	By the work of the tunnel.
St. Maurice..................	" 12	4 in.	1	..	Do	Do.
Craig (St. James W.)..........	" 20	6 in.	..	1	Recaulked the joint	Joint badly made.
	....	......	21	22		

This winter the Plumbers have been called out 258 times; 246 times for Pipes found frozen by the neglect of the tenants.

A good deal of these expenses could be saved to the Corporation, if the law and bye-laws, regulating the introduction of the water were so amended, as to relieve the Corporation of the obligation of introducing into the houses, and consequently of keeping in repair the service pipes, beyond the line of the streets. It is mostly through the walls of houses and yard lanes, that all the repairs to service pipes takes place, and most of the loss of time is occasioned by the neglect of the landlords or tenants to protect their cellar against the frost, which can burst the best made and strongest Pipe.

It is rather unjust to that portion of those citizens, that take extra pains and care to keep their water pipes from freezing, that they should be made to pay their shares of these expenses.

The cost of repairs to Main Pipes and Service, is as follows:—

MAINS.

Materials,	$ 40.42	
Wages,	1,330.25	
		$1,370.67

SERVICE PIPES.

Materials	$ 369.42	
Wages in Summer	422.36	
Wages in Winter	828.02	
Wages in repairing Footpaths	369.42	
		$ 1,619.80
		$ 2,990.47

HYDRANTS.

The expenses of keeping the Fire Hydrants in repair, and ready for Fire purposes, are as follows:—

Sundries	$ 164.84
Wages	1,092.44
	$ 1,257.30

It is seen by the Schedule below that 127 Hydrants were found frozen 276 times, against 102 Hydrants found frozen 211 times the year previous.

The principal cause of increase of number of times is due to the fact, that having been obliged, during last winter, to curtail so much the water supply of the City, that the main pipes were left empty at night and during part of the day during the months of February, March and April, which had the effect of freezing the Hydrants in a greater number.

Schedule shewing the Hydrants found frozen, during the Winter 1865 and 1866.

By the Rise of Water.		For want of Sewerage.		By Leaks.		By other Causes.		TOTAL.	
No. of Hydrants.	No. of Times.	No. of Hydrants.	No. of Times.	No. of Hydrants.	No. of Times.	No. of Hydrants.	No. of Times.	No. of Hydrants.	No. of Times.
..	..	10	1	4	1	40	1	54	1
..	..	12	2	2	2	10	2	24	2
..	..	2	3	1	3	9	3	12	3
..	..	3	4	1	4	5	4	9	4
1	5	..	..	..	..	2	5	3	5
..	..	1	6	..	..	4	6	5	6
..	..	1	7	..	..	..	..	1	7
..	..	1	8	..	..	..	..	1	8
..	..	..	..	..	..	2	9	2	9
..	..	1	10	..	..	..	..	1	10
..	..	2	11	..	..	3	11	5	11
..	..	1	12	..	..	..	..	1	12
..	..	..	..	..	..	1	14	1	14
..	..	..	..	..	..	1	15	1	15
..	..	..	..	..	..	1	16	1	16
..	..	..	..	..	..	2	17	2	17
..	..	1	18	..	..	..	..	1	18
..	..	..	..	..	..	1	22	1	22
..	..	1	25	..	..	..	..	1	25
..	..	..	..	..	..	1	29	1	29
1	5	36	107	8	10	82	154	127	276

During 1864 and 1865.

46	89	29	56	3	7	24	59	102	211

PUBLIC FOUNTAINS.

The Public Fountains are all in the same state of repair they were last year. Every Spring it is necessary to cement the basins, so as to repair the damage done by the frost. The brass jets on the fountain of the Victoria Square are all worn out; new ones should be got. These have to be imported either from the United States or Europe, as none are manufactured in this country; in the mean time jets for the other fountains might also be got.

The drinking taps which up to this date, are mostly made in wood, should be renewed by more durable ones.

Every year one or two of them might be replaced by ornamental ones in marble, or other durable material. I hope your Committee will soon have the means to give more attention to this subject, and will imitate what is done in all large cities, to join the ornamental to the useful.

The expenses incurred on those fountains during the year are as follows:—

Materials	$ 32 65
Wages	44 39
	$ 77 04

WATER SUPPLY.

The water supply which for several years, especially during last winter, had to be curtailed during the cold weather, has scarcely yet been affected this season, and there is every reason to believe that no difficulty of importance will be encountered this winter. This is principally due to the state of the water level of the St. Lawrence, which is two feet higher than last year, at the point where the Aqueduct takes its supply. The improvement made to the pumps of the Turbine Wheel, as already mentioned, and the skill and vigilance of the new men employed at the Wheel House, have also contributed a good deal to keep up the water supply. This state of things, however, which is due more to change than to management, is in my opinion, far from being satisfactory, and cannot be allowed much longer without exposing the City to large fires, and inconveniencing greatly the citizens. Therefore, no time should be lost to secure a more abundant supply of water. Last year, in a Special Report on the subject, I had the honor to recommend to your Committee, the erection of Steam Engines, as a temporary remedy to these difficulties, and one that could be applied in a few months.

These Engines should have been erected during the course of last summer, but obstacles, caused by financial matters, and which were not in the power of your Committee to remove in time (they having to obtain the authorization of the Provincial Legislature for power to borrow money), forced your Committee to delay the work until next season. Pending these negociations, and with the view of finding a better and more permanent plan to increase the water supply, I was instructed by your Committee, to get the survey of the North Shore of the River Saint Lawrence, from the Victoria Bridge, up to the mouth of the Lachine Canal, and as far back as the Montreal Aqueduct, taking all the levels and soundings at different points of the Lachine Rapids, and principally opposite *l'Isle au Héron*, where a new Company under the name of *St. Louis Hydraulic Co.*, intends to connect this Island to the North Shore, by means of an embankment, in order to develope the immense water powers the River affords at that place. Hoping to find at that point, a more advantageous position for the Wheels and Pumps of the Montreal Water Works, I have had the water levels taken every day at the following places: 1st, at Mr. Crawford's Farm, near where the proposed Dam is to be placed; 2nd, at Knox's Old Mills, above the old Dam; 3rd, at the entrance of the Aqueduct.

The following table shows these levels up to date :—

The datum for these being the low water mark in the Harbor of Montreal, *i. e.* 17 feet above the top of Mitre Sill of the Guard Lock of the Lachine Canal.

Schedule of the Water Level of the River St. Lawrence at the Lachine Rapids, taken every day from the beginning of January 1867.

DATE.	At Entrance of Aqueduct.	At Knox's Old Mill.	At Crawford's Farm.	Difference of Water Level between Knox's Old Mill and Crawford's Farm.	Difference of Water between Entrance of Aqueduct and Knox's Old Mill.	Total Difference
1866.						
November 6	......	32.39	10.86	21.53		
1867.						
January 1	37.50	33.39	13.02	20.37	4.11	24.48
" 2	37.65	33.44	13.87	19.57	4.21	23.78
" 3	37.80	33.64	14.47	19.17	4.16	23.33
" 4	38.45	33.69	15.27	18.42	4.76	23.18
" 5	38.55	33.84	16.02	17.82	4.71	22.53
" 6	38.20	33.94	16.47	17.47	4.26	21.73
" 7	38.00	33.94	17.67	16.27	4.06	20.33
" 8	37.55	33.44	18.77	14.67	4.11	18.78
" 9	37.15	33.29	21.97	11.32	3.86	15.18
" 10	36.25	33.19	22.27	10.92	3.06	13.98
" 11	36.60	33.49	23.07	10.42	3.11	13.53
" 12	37.90	33.74	24.17	9.57	4.16	13.73
" 13	37.60	33.64	24.17	9.47	3.96	13.43
" 14	37.45	34.04	.....	....	3.41	
" 15	38.10	34.64	.....	....	3.46	
" 16	38.05	34.74	30.64	4.10	3.31	7.41
" 17	38.60	35.54	30.39	5.15	3.26	8.41
" 18	39.00	36.14	30.09	6.05	2.86	8.91
" 19	39.20	36.64	29.74	6.90	2.56	9.46
" 20	39.00	36.14	29.69	6.45	3.86	10.31
" 21	39.20	36.44	29.04	7.40	2.76	10.16
" 22	39.10	36.24	29.47	6.77	2.86	9.63
" 23	38.90	35.94	29.37	6.57	2.96	9.53
" 24	38.95	36.14	29.17	6.97	2.81	9.78
" 25	38.85	35.39	28.17	7.22	3.46	10.68
" 26	39.40	36.14	28.37	7.77	3.26	11.03
" 27	39.40	36.04	28.17	7.87	3.36	11.23
" 28	39.15	35.84	28.37	7.47	3.31	10.78
" 29	38.90	35.44	28.17	7.27	3.46	10.73
" 30	38.80	35.34	27.97	7.37	3.46	10.83
" 31	38.60	35.24	28.15	7.09	3.36	10.45

Schedule of the Water Level of the River St. Lawrence, &c.

(*Continued.*)

DATE.		At Entrance of Aqueduct.	At Knox's Old Mill.	At Crawford's Farm.	Difference of Water Level between Knox's Old Mill and Crawford's Farm.	Difference of Water between Entrance of Aqueduct and Knox's Old Mill.	Total Difference
1867.							
February	1	39.00	35.54	28.75	6.79	3.46	10.25
"	2	38.95	35.44	28.97	6.47	3.51	9.98
"	3	38.75	35.34	28.77	6.57	3.41	9.98
"	4	38.70	35.44	28.87	6.57	3.26	9.83
"	5	38.50	35.39	28.67	6.72	3.11	9.83
"	6	38.30	35.14	28.77	6.37	3.16	9.53
"	7	38.40	35.34	28.67	6.67	3.06	9.73
"	8	38.65	35.24	27.67	7.57	3.41	10.98
"	9	38.50	34.64	25.83	8.81	3.86	12.67
"	10	38.40	34.74	26.13	8.61	3.66	12.27
"	11	37.65	33.84	26.73	7.11	3.81	10.92
"	12	37.95	34.14	26.83	7.31	3.81	11.12
"	13	38.40	34.64	26.93	7.71	3.76	11.47
"	14	38.30	34.34	25.83	8.51	3.96	12.47
"	15	38.25	34.04	24.63	9.41	4.21	13.62
"	16	38.40	34.44	24.73	9.71	3.96	13.67
"	17	38.60	34.49	25.83	8.66	4.11	12.77
"	18	38.40	34.44	25.73	8.71	3.96	12.67
"	19	38.45	34.54	26.23	8.31	3.91	12.22
"	20	38.35	34.24	25.53	8.71	4.11	12.82
"	21	38.25	34.24	23.33	10.91	4.01	14.92
"	22	38.30	34.44	25.73	8.71	3.86	12.57
"	23	38.15	34.29	25.53	8.76	3.86	12.62
"	24	38.40	34.54	26.43	8.11	3.86	11.97
"	25	38.20	34.14	26.03	8.11	4.06	12.17
"	26	38.15	34.09	25.93	8.16	4.06	12.22
"	27	38.20	34.14	25.83	8.31	4.06	12.37
"	28	38.15	34.04	25.43	8.61	4.11	12.72

Schedule of the Water Level of the River St. Lawrence, &c.

(*Continued.*)

DATE.	At Entrance of Aqueduct.	At Knox's Old Mill.	At Crawford's Farm.	Difference of Water Level between Knox's Old Mill and Crawford's Farm.	Difference of Water between Entrance of Aqueduct and Knox's Old Mill.	Total Difference
1867.						
March 1	38.15	34.09	25.03	9.06	4.06	13.12
" 2	38.40	34.34	26.23	8.11	4.06	12.17
" 3	38.00	34.19	26.63	7.56	4.81	12.37
" 4	38.20	34.29	26.48	7.81	3.91	11.72
" 5	38.15	34.34	26.53	7.81	3.81	11.62
" 6	38.10	34.04	25.73	8.31	4.06	12.37
" 7	38.05	34.04	25.33	8.71	4.01	12.72
" 8	37.90	33.94	25.53	8.41	3.96	12.37
" 9	38.00	34.04	25.23	8.81	3.96	12.77
" 10	38.15	34.09	25.63	8.46	4.06	12.52
" 11	38.10	33.94	25.73	8.21	4.16	12.37
" 12	38.00	33.84	24.93	8.91	4.16	13.07
" 13	38.10	33.84	24.83	9.01	4.26	13.26
" 14	37.90	33.94	26.83	7.11	3.96	11.07
" 15	37.70	33.74	26.43	7.31	3.96	11.27
" 16	37.80	33.84	25.93	7.91	3.96	11.87
" 17	38.00	33.94	25.23	8.71	4.06	12.77
" 18	38.00	33.94	25.53	8.41	4.06	12.47
" 19	37.70	33.64	25.33	8.31	4.06	12.37
" 20	37.60	33.54	24.43	9.11	4.14	13.25
" 21	37.90	33.94	23.83	10.11	3.96	14.07

By this table it is easily seen that the back water, this winter, has been such as to effect considerably the working of any Wheel and machinery placed at such a level so as to take advantage of the average fall of the summer level of the river. During the summer, in the month of November, the difference of level between Knox's Old Mill and Crawford's Farm was 21.53 feet, and during the month of January and February of this year the levels between these two last mentioned points have varied from 20.37 feet to 4.10 feet—the least fall was on the 16th day of January. This compared with the summer levels indicates a great variation in the fall of the river between the same points.

Survey of the river above the entrance of the Aqueduct has also been made, and levels and soundings have been taken to ascertain the practicability of extending the entrance of the Aqueduct higher up, so as to give it an additional head of water of two to three feet, by building along the shore a line of crib work similar to that of the Lachine Canal. The levels taken show, that to get two feet of additional head, it would be necessary to extend up stream this line of crib work a distance of 7,500 feet, and for three feet additional head a distance of 10,400 feet, that is opposite the old Parish Church of Lachine.

The soundings indicate that this crib work would have to be erected in an average depth of water of 25 feet, rendering the cost of such construction very high, say $40 per lineal foot.

Not satisfied with these results, I have ordered a survey to be made, and levels to be taken for another entrance to the Aqueduct a little higher up than the present one, in a place which, by soundings and by the observations of several winters, is shewn to be the most suitable part of the river, and to tap the present Aqueduct at a sufficient distance from its mouth, so as to be below the obstructions caused by the anchor ice, which is observed every year to embarass more or less the upper part of the Aqueduct. This survey and levels showed that the project is practicable, and by doing the the work soon, the proposed steam engine might be dispensed with. This cut should be made of such dimensions, as regard the width and the depth, as to prevent as far as possible, the inconvenience caused in winter by the ice, and should also form the beginning of the enlargement of the present Aqueduct; which, before ten years elapse, will have to be enlarged, unless some other mode of supplying the City with water be adopted. I am of opinion that this plan should be adopted as one that would be in accordance with the present works and that would bring sooner to the City the reward for the great sacrifices made by its citizens to procure the present water supply. I would not however advise this project without first consulting other Hydraulic Engineers. I will here give the principal dimensions and description of the work as I propose to have done.

The bottom of this new canal to be 62 feet wide at its entrance, and at the level of 25 feet, according to the datum of low water mark in the harbour: that is 2 feet lower than the bottom of the present Aqueduct; to have the same fall that is 2½ inches per mile, with slopes of 3 to 1 up to the level of 35 feet; then 1¼ to 1 up to the level of 40 feet. This last slope which is about the line of the water level, to be lined with dry stone walling. From level 40 to 44 or 50 feet, as the top surface of the ground will admit, the slopes to be 1½ to 1; with a berm of 12 feet wide and side ditches. Slopes of spoil banks generally 2 to 1 at the front, and 1½ to 1 at the back. At the entrance an iron Girder Bridge built on stone Piers not less than 50 feet of span in the clear. These Piers to form on the up stream part, a smooth face to receive floating iron Gates, such as used on some dry docks in England. The mouth of this new entrance to be protected by crib work with recesses into them to receive the Gates when not in use.

This work, forming part of the enlargement of the present Aqueduct, will entail a good deal of expense and should be undertaken only with the view to continue this canal down to the Wheel House when circumstances may require it. Otherwise I think it will be better to resort to the Steam Engines, as already spoken of and wait for a later decision as to the best mode of improving the Aqueduct in a more permanent manner. I have prepared Plans and Estimates of both these projects. I have during this summer availed myself of the assistance of H. McFarlane, C. E.

The expenses incurred on these surveys are as follows:—Salaries of Engineer and Chainmen,...$341 95

The consumption of water during the year has been on an average of 4,781,029 galls. per day, or 47.81 galls. per head of the present population supplied with water from the Aqueduct, and which I estimate at about 100,000 inhabitants.

The following table shows the average daily consumption for each month of the year 1866 compared with the year 1865. This table includes also 13,763,500 galls. for watering the streets, 694,000 galls. for flooding rinks. I have been anxious for many years to get as near as possible to the amount of gallons of water used for the extinction of fires. I hope this next year to be able to get this information through the kindness of A. Bertram, Chief Engineer of the Fire Department, who has already adopted certain precautions so as to gauge the water.

SCHEDULE shewing the Average Daily Consumption of Water, in Imperial Gallons, for the Year 1866, compared with that of 1865.

MONTH.	Average 1866.	Average 1865.	Increase.	Decrease.	Total Consumption for 1866.
February	2,219,809	2,985,838	....	766,029	62,154,682
March	2,562,627	3,760,457	....	1,197,830	79,441,460
April	4,538,395	4,493,937	44,458	....	136,151,859
May	4,538,332	3,187,978	1,350,354	....	140,688,306
June	4,708,153	4,928,084	....	219,931	141,244,595
July	5,690,600	4,754,354	936,246	....	176,408,600
August	5,639,903	5,403,834	236,069	....	174,836,994
September	5,478,200	4,974,663	503,537	....	164,346,000
October	5,460,095	4,531,097	928,998	....	169,262,964
November	5,625,380	3,449,815	2,175,565	....	168,761,412
December	5,624,358	4,332,526	1,291,832	....	174,355,110
1867.					
January	5,286,506	4,060,503	1,226,003	....	163,881,686
Total	57,372,358	50,863,086	8,693,062	2,183,790	1,751,533,668
Daily Average 1866.	4,781,029		Monthly	Av., 1866	145,961,139
“ 1865.	4,238,590		“	“ 1865	129,162,645
Increase	542,439				16,798,494

The above table indicates that the consumption of water is increasing every year as the population increases. The average daily increase has been of 542,439 gallons, *or 16,798,000* gallons during the whole year.

This table gives the comparative increase of the water consumption since 1858.

Comparative Schedule, shewing the daily Consumption for each month, from 1858 to 1866, in the City of Montreal.

DAILY AVERAGE.	1858.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.
January	2,295,000	3,209,000	3,035,000	3,590,300	4,334,265	3,676,755	4,343,153	4,426,068	4,060,503
February	2,295,000	3,295,000	3,283,000	2,904,760	3,815,390	3,231,875	3,523,169	2,985,838	2,219,809
March	2,295,000	3,225,000	3,238,000	2.695,220	2,279,100	3,087,880	3,332,475	3,760,457	2,562,627
April	2,752,000	3,092,000	3,064,000	2,828,870	3,389,637	3,977,615	4,003,223	4,493,937	4,538,395
May	2,780,000	3,221,000	3,032,000	3,149,628	3,715,171	4,307,049	3,855,934	3,187,978	4,538,332
June	3,000,000	3,938,000	3,251,000	3,020,164	3,786,468	4,479,469	4,025,742	4,928,084	4.708,153
July	2,942,000	3,410,000	3,463,000	3,204,260	3,949,056	4,154,671	4,381,352	4,754,354	5,690,600
August	2,768,000	3,621,000	3,835,000	3,094,612	3,947,433	4,504,426	4,602,058	5,403,834	5,639,903
September	3,026,000	3,065,090	3,417,000	3,611,212	3,738,938	4,526,220	4,239,849	4,974,663	5,478,200
October	2,819,000	3,200,000	3,661,000	3,270,000	3,831,535	4,055,170	4,323,540	4,531,097	5,460,095
November	2,805,000	3,047,000	2,889,000	3,130,980	3,621,323	3,529,333	3,728,530	3,449,815	5,625,380
December	2,900,000	3,117,000	3,250,000	2,254,750	3,748,800	3,624,489	4,213,023	4,332,526	5,624,358
	32,678,000	39,140,000	39,428,000	37,844,756	44,157,116	47,154,952	48,572,049	51,228,651	56,146,355
Daily average for the whole Year	2,723,166	3,261,666	3,285,666	3,153,729	3,679,759	3,929,579	4,047,670	4,269,054	4,678,863
Increase	......	538,500	24,000	......	526,030	249,820	118,091	221,384	409,809
Decrease	......,	......	......	131,937	......	......	......	......	......

MANAGEMENT.

The amount of expenditure incurred during the year has been as follows, for

Improvements	$ 90,847 76
Administration	31,548 54
	$ 122,396 30

The following shows these in detail :—

STATEMENT of the EXPENSES from 1st February, 1866, to 1st February, 1867.

N.B.—The following has been paid out of the Revenue of the current year.

WORKING DEPARTMENT.		$ cts.	$ cts.
LINE OF AQUEDUCT.			
Amount expended for repairing fences, bridges, ditches, &c. :—			
Materials	$ 94.58		
Wages	402.28		
		496.86	
Amount expended for Cutting Ice :—			
Materials	613.47		
Wages	1,806.27		
		2,419.74	
Keeper's Salary		375.00	
			3,291.60
WHEEL HOUSE.			
Amount expended to finish bank of archway over the Rising Main :			
Laborers' Wages	$305.90		
		305.90	
Covering old Wheel House :—			
Materials	191.89		
Wages	8.00		
		199.89	
Repairing Floors :—			
Materials	45.21		
Laborers' Wages	18.43		
		63.64	
Amounts carried forward		569.43	3,291.60

		$ c.	$ c.
Amounts brought forward..............		569.43	3,291.60
Leather Hose		123.50	
Amount expended for Fuel, Oil, Tallow, &c..........................		806.40	
Staff's Salaries.....................		2,619.06	
Amount expended to repair Machinery, &c..........................		553.70	
Expenses incurred during the Fenian invasion:			
Paid the Police for watching the Works.		114.00	
			4,786.09
TAIL RACE.			
Amount expended for repairing Fences, Dam and Banks:—			
Materials	146.55		
Laborers' Wages....................	109.61		
		256.16	
Keeper's Salary		243.00	
			499.16
PIPE TRACK.			
Amount expended for repairing Fences, cleaning valves and filling up holes:			
Men's Wages			76.60
RESERVOIR.			
Amount expended in repairing roof of Valve House....................		329.41	
Trees Planted......................		12.50	
Repairs to Fences:—			
Laborers' Wages....................		16.05	
Fuel		84.78	
Sundries		27.15	
Keeper's Salary		475.00	
			944.89
FIRE HYDRANTS.			
Amount expended for packing:—			
Materials..........................	37.86		
Wages	69.93		
		107.79	
Winter Inspection:—			
Wages	577.11		
Summer Inspection:—			
Wages	122.20		
		699.31	
Amounts carried forward.............		807.10	9,598.34

		$ c.	$ c.
Amounts brought forward		807.10	9,598.34
Repairs:—			
Materials	127.00		
Wages	323.20		
		450.20	
			1,257.30
DISTRIBUTION PIPES.			
Amount expended to repair Main Pipes, Valves, and Streets:—			
Materials	40.42		
Laborers' Wages	1,330.25		
		1,370.67	
Amount expended to repair Service Pipes:			
Wages in Winter	828.02		
Wages in Summer	422.36		
		1,250.38	
Footpaths' repairs		369.42	
			2,990.47
PUBLIC FOUNTAINS.			
Amount expended for repairs:			
Materials		32.65	
Wages		44.39	
			77.04
Watching at Valves and Reservoirs, and Distributing Water by puncheons—			
Sundries		141.10	
Wages for last Winter	4,284.05		
Wages for this Winter	207.33		
		4,491.38	
			4,632.48
SHOP DEPARTMENT.			
Amount expended for—			
Materials		186.70	
Wages		2,396.24	
			2,582.94
OFFICE.			
Officers Salaries		5,291.56	
Salaries of Bailiffs and Recors in the Accountant's Department	1,153.01		
Turn-cocks, Policemen, &c., in the Superintendent's Office	1,357.15		
		2,510.16	
Amounts carried forward		7,801.72	21,138.57

		$ c.	$ c.
Amounts brought forward............		7,801.72	21,138.57
Stationery and Printing for Accountant's Department	530.68		
Stationery and Printing for Superintendent's Department	545.49		
Sundries	206.43		
		1,282.60	
			9,084.32

SUNDRIES.

Amount expended for—

Rent	500.00	
Carriage Hire........................	572.42	
Assessments and School Taxes........	172.08	
Insurances	81.15	
		1,325.65
Total..		$31,548.54

Statement of the Amount expended out of the Special Loans.

PIPE LAYING.

Amount expended for Cast-Iron Pipes and different Castings.............	$7,979.74		
Lead Pipes and Brass Works...........	4,388.40		
Sundries............................	463.03		
Wages	3,354.81		
			16,185.98

PERMANENT REPAIRS AT WHEEL HOUSE.

BREAST WHEELS :—

Amount expended for two Crank Shafts.	$3,950.93		
" " repairing the Air Vessels	7,142.82		
General repairs to Machinery..........	6,288.20		
		17,381.95	

TURBINE WHEEL :—

Amount expended for altering Valves, &c., and for one Air Pump........		2,625.20	
			20,007.15
Amount carried forward.............			36,193.13

		$ c.
Amount brought forward		36,193.13

DOUBLE RISING MAIN.

Paid D. Y. Stewart & Co., for 24 Pipes	$38,130.70	
" Victor Hudon, for Lead	2,646.42	
" Sundries	599.39	
" Men's Wages	1,920.76	
		43,297.27

EXTENSION OF RESERVOIR.

Amount paid for excavating	11,015.41

ENLARGEMENT OF AQUEDUCT.

Amount expended for Survey	341.95
	$90,847.76

INVENTORY of STOCK and TOOLS on hand January, 1867.

CAST IRON on Pipe Track, College Garden, and Yard in German Street.

	24in	16in	12in	10in	8 in.	6 in	4 in.	3 in.
Cast Iron Pipe in feet	9216	60	176	220	72	1882	3123	......
Four Way Branches	....	....	6	....	5	13	13	......
Three " "	....	....	7	7	1	8	27	......
Sleaves	3	2	10	4	....	22	26	......
Taper Pipes	....	1	2	....	8	4	8	......
Elbows	....	....	....	....	....	....	2	......
Double Bend	....	....	....	....	....	....	1	......
Forks	1	....	....	....	....	....	....	......
Caps	....	4	1	3	2	7	23	......
Plugs	....	4	16	....	11	14	9	1
Stop Cocks	2	1	4	1	1	30	16	......

1 Old Hydrant
4 do (Water Taps.)
4 Hydrant Posts.
4 do Seats.
20 Pieces for Raising Hydrants.

16 Hydrant Covers.
4 " Frames.
14 " Main Holes.
13 Stop Cock Covers.
250 Service Plates.

SUNDRIES IN YARD IN GERMAN STREET.

260 Service Boxes.
10 Cedar Posts for Hydrants.
11 do. do. unfinished.
62 Double Service Stones.
16 Single do.

1 Valve Stone.
14 do unfinished.
13 Hydrant Stones.
97 Hydrant Frame Covers.

WORK SHOPS NOTRE DAME STREET.

BRASS WORKS.

DIAMETER.	1½ in.	1¼ in.	1 in.	⅜ in.
New Stop Cocks with Couplings	......	......	72	29
Old do.	15	5	98	6
New Elbows with Couplings	......	......	15	182
Old do.	16	......	81	5
Single Joints	......	......	15	660
Three Way Branches	......	......	44	95
American Nozles	......	......	......	55
Hydrant Sludge Cocks	......	......	......	13
Bed Cocks	......	15	12	10

2 Ball Cocks.
2 Hydrant Stop Cocks.
1 Set Jet d'eau Fixings.
18 Valve Spindles covered with Brass.

LEAD PIPE AND OTHER LEAD.

49 Bundles of ⅝ inch Lead Pipe,
5 " 1 " "
½ " 1½ " "
¼ " ½ " "

534 Bars of Pig Lead.
200 lbs. Scrap Lead.
45 " Block Tin.
5 " Solder.

TOOLS AND UTENSILS AT SHOPS, NOTRE DAME STREET.

40 Picks.
43 Shovels.
13 Crow Bars.
5 Sledges.
5 Hand Hammers.
12 Small " for breaking stones.
4 Hand Saws.
1 Circular Saw.
2 Wood Saws.
3 Hand Axes.
3 Framing Chisels.
3 Chisels "Assorted."
10 Cast Steel Drills.
2 Drill Frames.
3 Old Drill Frames.
7 Ratchet Braces.
3 Hand "
3 Screw Wrenches.
8 Iron "
2 Boxes Pipe Layers Tools.
2 Ladles.

1 Skimmer.
5 Pipe Layer Pots.
2 Adzes.
10 Rammers.
2 Joint Machines.
1 Set Augers for Plates "brass."
5 Augers "assorted."
1 Set Augers for Plates "iron."
2 Hoisting Gins.
3 Sets of Blocks.
1 Set Patent Block and Tackle Chain.
1 Tripod.
1 Set of Rope.
1 Wrapping Chain.
1 Piece Cable "
2 Grind Stones.
2 Iron Pumps.
2 Square Wooden Pumps.
1 Old Fire Engine Pump.
1 Force Pump.
1 Spirit Level.

TOOLS AND UTENSILS—(Continued).

3 Hand Bells.
41 Valve Keys "assorted."
7 Hydrant Keys.
1 Steam Boiler.
1 Double Sleigh.
2 Small Sleighs.
1 Platform Scale.
1 Balance " "old."
1 " " "new Fourbain."
1 Vice.
1 Turning Lathe.
2 Hand Barrows.
4 Wheel "
42 Wooden Shovels.
8 Cribs.
36 Pick Handles.
18 Hand Spikes.
42 Birch Brooms.
1 Wooden Beetle.
126 Buckets.
1 Clock.
120 Feet Rubber Hose.
75 Colored Lamps.
16 Coal Oil "
4 Round Globe Lamps.
3 Oil Cans, assorted.
2 Steam Guages.
2 Pairs Long Boots,
2 Square Stoves.
1 " " small.
1 Boiler for Stove, damaged.
2 Sets Rope Gaskets.
1 " Rubber "
1 Hydraulic Press.

BLACKSMITH'S TOOLS.

1 Anvil.
1 Beck Horn.
2 Vices.
3 Drill Frames.
36 Pair Tongs.
31 Heading Tools.
17 Swedges.
63 Mandrills and Punches.
1 Bellows.
1 Portable Forge.
2 Braces.
1 Box Small Tools.
1 Finishing Block and Plate.
1 Grind Stone.
1 Copper Stamp.
2 Hand Hammers,
1 Sledge.
3 Cold Chisels.
1 Boring Machine.
1 Set of Alphabet Stamps.
4 Sets Hammers.
11 Pairs Dies.
29 Taps.
4 Screw Plates.

WATER METRES.

2 2½-inch Kennedy's.
2 ¾ " do (damaged.)
1 ½ " do. do.
2 1 " Worthington's do.
1 ⅝ " do.
1 ⅜ " Aubin's.

PATTERNS.

1 Set of Patterns & Core Boxes. for 1″ Stop Cocks.
1 do. do. for 1″ Nozles.
1 do. do. for ¾″ do.
1 do. do. for ¾″ Stop Cocks.
1 do. do. for 1″ Three ways
1 do. do. for ¾″ do.
1 do. do. for 1′ Single j'nts
1 do. do. for ¾″ do.

SUNDRIES.

150 lbs. Iron Bars.
90 " " Strap.
200 " Cut Nails 3 & 4-inch.
5 " Nuts.
100 " Scrap Iron.
2 Tons of Old 6-inch Pipes.
1 " " 4 " "
100 lbs. " Brass.
50 " Zinc.
20 Rings for Boxes.
100 " Hydrant Frames.
22 American " Handles.
65 lbs. Jute Packing.
10 " Rubber Packing.
1 Piece " Cloth for Blasting.
18 Bags for Powder for Blasting
1 Office Lamp.
36 Gallons Coal Oil.
½ Gallon Olive "
1 Thermometer.
25 Lengths of Stove Pipes.
3 Elbows.
¾ Chaldren Smith Coals.
3 Short Boxes.
14 3" Planks.

TOOLS AND UTENSILS—(Continued).

WHEEL HOUSE TOOLS.

33 Wrenches of different sizes.
1 Shifting Wrench.
2 Small Box Wrenches.
5 Tap “
9 Crank Handles.
5 1½ & 2½ Augers.
1 Gimlet.
2 Pairs Carpenter's Compasses
2 “ Collopers.
1 Carpenter Set Stone.
1 Grind Stone.
1 Bench Vice.
1 Hand “
1 Bench.
1 Adze.
1 Axe.
1 Broad Axe.
1 Hand Saw.
1 Small Saw for Iron.
1 Cross Cut Saw.
3 Planes.
3 Wood Chisels.
42 Ice “
12 Cold “
1 1½″ Wood Chisel.
1 Spirit Level.
2 10 & 7 feet Measuring Rods.
1 Carpenter Brace and 2 Bitts.
2 Screw Plate, Stocks and Dies with 18 Taps.
1 Small Screw Plate.
1 “Bear” Punching Machine.
1 Swan Neck “ “ with 4 Punches.
1 Drilling Frame with Crank, Brace and Strand.
2 Small Steel Drifts.
1 Pair Pinchers.
8 Pairs Blacksmith Tongs.
7 Steel Drivers.
3 Setters.
4 Shavocks.
21 Ice Hooks.
3 Eye Bolts and Nuts
2 “ for breaking Stone
1 14 lbs. 1 8 lbs. and 1 6 lbs. Sledge.
3 Rivetting Hammers.
1 Box containing Pipe Layer Tools &c.
63 Old Shovels.
18 Picks.
14 Drills different sizes.
1 Old Ratchet Brace.
21 Files.
1 Large Crow Bar.
27 Crow Bars.
1 Wheel Bucket Straightener.
2 Small Pulleys.
1 Pair Pulley Hooks.
7 Lifting Chains.
1 Four Sheaved “Complete.”
1 Log Lifting Apparatus for St. Pierre Bridge.
6 Small Eye Lifting Bolts.
1 New Hand Pump Valve.
1 Air Pump.
4 Iron Hand Pumps.
1 Wro't Iron Machine for Joi'ts
2 Puddle Pounders.
6 Peck Poles.
1 Anvil.
1 Blacksmith's Bellows.
1 Wedge Cutting Machine.
4 Locket Hooks.
2 Wheel Barrows.
6 Wooden Snow Shovels.

PATTERNS.

1 Pattern of large Pinion.
1 “ Segment of Breast Wheel.
1 Pattern of Sluice Gate.
4 “ Girders.
1 “ Bridge Bracket.
1 “ Bevel Pinion.
2 “ Pillow Blocks.
1 “ Spur Pinion.
1 “ Wicket Gate for Turbine.
2 Pattern of 12″ Valve.
2 “ 10″ “
2 “ 4″ “
2 “ Canadian Hydrant.
1 Pattern of Queen “
1 “ 12″ to 6″ Taper Pipe.
1 Pattern of 10″ to 6″ Taper Pipe.
1 10″ Single Branch Pattern.
1 Pattern of 12″ Cross Pipes.
1 “ Hydrant Plate.
3 “ “ Covers.
1 “ 6″ Slip Socket.
1 “ 16″ Valve Cover.
3 “ 10″ Bends.
1 “ Drinking Tap.

TOOLS AND UTENSILS—(Continued).

1 Pattern of 12″ Pipe.
1 “ 10″ “
6 “ 4″ Cross Pipe.
2 “ 6″ “
1 “ 4″ Elbow.
2 “ 24″ Bonnet.
1 Lot of Patterns of 12,″ 10,″ 6,″ 4,″ and 3″ Plugs, Bonnets, Slip Sockets, &c.
1 Lot of Small Patterns for Service Plates, Valve Gates &c.
1 Pattern of 24″ Bolt Slip Socket.
1 Pattern of 4′ and 3″ Tapers.
Patterns of different Articles comprising Gates of Val's Slip Sockets, Valve covers Hydrant Frames, &c., &c.
1 Pattern of Core Box for 10 feet Spur Gear.

IRON AND BRASS WORKS.

8 Boxes Guage Locks.
2 ½″ Brass Check Cocks.
114 lbs. of Old Brass.
46 lbs. of Copper.
1 Lot of Bolts and Nuts.
700 lbs. of Cast Iron.
1 Bolt and Nut 9 feet long.
¾ Keg, 6″ Spikes 168 lbs.
8 Service Plates.
7 Side Plates of Breast Wheels
11 Wr't Iron Straps.
2 lbs. 9″ Spikes.
1 Set of Cast Iron Pinion for Breast Wheels.
2 24″ Bolted Slip Sockets.
1 Entire “
6 Spur Gear Segments of Br'st Wheels.
2 Centre Segments of Breast Wheels.
4 Spare arms for Breast Wheels
5 Spare Bolts.
¾ Keg ⅜″ Rivets.
1 New Gate Motion Wheel.
1 Cast Iron Foot for Turbine Shaft.
15 Old Wr't Iron Suspension Bolts from the Old Air Vessels bottoms.
2 Wr't Iron Hoops.
2 Screw and Link of blow off.
1 Box of Nuts, Bolts, &c., 2 cwts.
2 Complete Sets of Gate Motions of Breast Wheels, comprising Worms, Sc'ws and Brackets.
1 12″ Flange Pipe for Air Pumps.
2 4″ Elbow.
1 4″ Slip Socket.
45 Feet ⅜″ Iron Tubing.
1 Box ⅜″ Rivets.
38 Feet of 24″ Pipes.
6 “ 30″ “
5 30″ Slip Sockets.
1 24″ Fork.
1 30″ “
1 Spare Bonnet for 30″ Pipe.
2 Crank Shafts.
1 Old Wrought Iron Strap.
5 Hose Couplings.
10 Bucket Brackets.
8 Keys from Crank Shaft.
1 New Brass Follower.

SUNDRY MATERIALS.

10 Yards of Canvas.
1 Zinc Weight.
300 Roofing Slates.
20 3″ Planks.
17 1″ Boards Tongued and Grooved.
10 1¼″ Boards “ “ Grooved.
320 Feet of Square Hemlock.
70 Boxes for Sheet Iron.
368 Sheets of painted Sheet Iron
1 Coil of Rope Yarn.
17 India Rubber Bags.
2 Packages of Fuse.
2 Gallons Coal Tar.
90 Feet India Rubber Hose.
41 2″ Maple Coggs 3½ feet for Turbine.
12 2″ Maple Coggs 18 inch for Turbine.
204 3′ Maple Coggs 2 feet for Turbine.
37 New Pannelled Doors.
2 Large Doors.
91 Hickory Teeth for Turbine.
1 Lignum Vitæ Step for do.
2 Wooden Valve Chamber Covers.

TOOLS AND UTENSILS—(Continued).

110 Fathoms of Manilla Rope 18″ 2½,″ 37′ 3½,″ 25″ 4″ and 30 7.″

UTENSILS.

25 Oil Lamps.
21 Oil Cans.
11 Lamp Chimneys.
16 Water Buckets.
22 Corn Brooms.
2 Tin Grease Boxes.
1 Iron Tallow Barrel.
2 Zinc Oil Barrels.
2 Tin Basins.
1 Tin Drainer.
3 Scrubbing Brushes.
2 Paint Brushes.
1 Brass Tube for Air Vessel.
5 Mammoth Heater Coal Stoves.
1 Albanian Coal Stove.
12 Lengths of 12″ and 2 Elbow Pipes.
21 Lengths 9″ Stove Pipes.
1 9″ T Pipe, and 1 9″ Elbow.
3 9″ Stove Pipe Elbows.
2 7″ Tee Pipes and 6 7″ Elbows.
711 Lengths 7″ Stove Pipes.
1 Large double Window.
1 Buffalo Robe.
1 Bunk and Buffalo Robe.
2 Large Cupboards.
3 Coal Scuttles.
1 Coal Box.
1 Eight Day Clock.
3 Thermometers.
2 Writing Desks.
1 Zinc Telegraphic Weight.
1 Lead Pot.
1 Drawing Table and Trestle.
1 Fire Reel and Hose.
1 24″ feet Ladder.
1 2″ Wheel Truck, and 1 4″ Wheel.

STORES.

30 lbs. Lead.
3 " Ground Sulphur.
30 " Tallow.
30 " Tallow Candles.
150 " Sheet Lead.
¼ Side of Leather.
1½ Keg Red Chalk.
⅔ Keg Yellow Ochre.
¾ Brl. Spanish Brown.
3¾ Gall. Varnish.
7 " Linseed Oil.
3 Packages Lamp Black.
½ Keg Whiting.
1 Barrel Soft Soap.
30 Galls. of Olive Oil.
15 " " Coal "
1 Bale Cotton Waste.
¾ Keg White Lead.
½ " Vermilion.
75 Tons Coals.

AT RESERVOIR.

8 Crow Bars.
1 Shovel.
2 Picks.
2 Cold Chisels.
1 Screw Wrench.
2 Stoves.
1 Glass Lamp.
2 Oil Cans.
1 Gun and 1 Revolver.
3 Thermometers.
1 Rain Gauge.
1 Evaporation Gauge.
1 Wire Sieve,
1 Iron Pounder.
21 Lengths of Stove Pipes.

AT GATE ON AQUEDUCT.

1 Sounding Line, "1,000 feet.
2 Gauges.
1 Grabbing Iron.
1 Sounding Lead.
1 Skiff.
1 Iron Shovel.
1 Axe.
2 Wooden Shovels.
1 Glass Coal Oil Lamp.
1 Wheel Barrow.
3 Snaiths and Scythes.
1 Short do.
1 Thermometer.
1 Rope, "9 yards."
2 Ice Chisels.
1 Rifle (Ballard).
1 Small Anchor, 36 lbs.

TOOLS AND UTENSILS—(Continued).

AT ENTRANCE OF AQUEDUCT.

4 Iron Chains.
2 Iron Shovels.
2 Picks.
6 Iron Chisels.
1 Wooden Shovel.
2 Coils Rope, " 100 yards."
3 Lines for Sounding, 90 yards.
300 feet of Safety Fuse.
14 Tubes for Blasting.
8 Peck Poles.
50 Yards of Old Rope 1¼"
8 Rubber Bags for Blasting.
3 Kegs of Powder.

OFFICE.

1 Mahogany Writing Desk with Stool.
1 Mahogany Writing Desk & Table.
1 Pine Drawing Table.
1 Book Case.
1 Wash Stand and Basin.
2 Large Chairs.
5 Chairs.
1 Map of the City of Montreal.
4 Boxes for old Books and Documents.
3 Pine Drawing Boards.
2 Letter Presses.
2 Waste Baskets.
1 Time Piece.
6 Yards of Carpet.
1 Transit Instrument with Box complete.
1 Level Instrument with Box Rod complete.
Prismatic Compass and other Surveying Instruments.
1 Chain.
Drawing Instruments.

The Yard on Craig and German Streets, used by the Department for the keeping of the new and old material, such as cast iron pipes, and other iron works, stoves, sand, wood &c., being likely to be converted into a Drill Shed, it will become necessary to look for another in a convenient and central part of the City. While on this subject, I would recommend also that a proper and suitable place be acquired for the Work-shops to be in connection with this Yard, where the whole could be under the care of one single Guardian.

In closing this Report, I have to thank your Committee for the warm support and entire confidence received from them in the execution of my daily work, which has been rendered easy by the respect, obedience and diligence of those employed under me, to whom I also return my sincere thanks.

I have the honour to be,
Gentlemen,
Your most obedient servant,
LOUIS LESAGE,
Superintendent of Water Works.

MONTREAL, 11th, March 1867.

SPECIAL REPORT
ON
RESERVOIRS.

SPECIAL REPORT

To the City Council of Montreal upon the expediency and cost of raising the Walls of the Reservoir of McTavish Street, and also on the necessity of having a Reservoir at a higher level than the present one.

" Extract from the Minutes of a Meeting of the City Council of Montreal, " held on Friday the 16th November 1866 :—

" The order of the day being read to consider a motion of Alderman " DAVID on the expediency of raising the banks of the distributing Reser- " voir at the foot of the Mountain, with a view to increase the storage " of water,

" Alderman DAVID moved, seconded by Alderman GOYETTE,

" That in the opinion of this Council it is expedient and desirable to " raise the revetment wall of the present distributing Reservoir at the " foot of the Mountain, with a view of increasing the pressure for the " higher portions of this City, and that the Water Committee be accord- " ingly instructed to enquire and report as to the practicability and cost " of the said scheme.

" Alderman GORRIE moved in amendment, seconded by Councillor " McGAUVRAN,

" That the motion of Alderman DAVID, now before the Council, be " not acted upon at present, but that it be referred to the Water Commit- " tee with instructions to enquire into the feasibility, cost and advantages " to be derived from the same.

" And that the Committee do report to the Council at as early a " period as possible on the advisability and cost of creating a much " larger storage for water than exists at present, by erecting a new and " extensive Reservoir either inside or outside the City limits, at the West " End, capable of containing at least one hundred million gallons of " water. Also to enlarge the existing Reservoir at St. Denis Street so as " to contain fifteen or twenty millions of gallons, and generally to report " upon any other alterations or improvements that they may consider " necessary to the Aqueduct or other parts of the Water Works.

" Alderman RODDEN moved in amendment to the amendment, " seconded by Alderman CONTANT,

" That the motion under consideration be referred to the Water " Committee, and that the Superintendent of the Water Department " under the directions of the Water Committee be instructed to report on " the expediency and cost of increasing the elevation of the present " Reservoir and the construction of a new Reservoir in a more elevated " position.

" The question being put on the amendment to the amendment, the " Council divided thereon: Yeas 7 ; Nays 7.

" The votes being equally divided H. W. the Mayor gave his casting " vote in favor of the amendment.

" So it was carried in the affirmative and *Resolved* accordingly.

" *Certified,* CHAS. GLACKMEYER,
City Clerk."

TO THE MAYOR, ALDERMEN AND COUNCILLORS OF THE CITY OF MONTREAL.

GENTLEMEN,

In accordance with the above Resolution of your Council I beg leave to report that, having given the above subject my most serious consideration, I now respectfully submit the following remarks: Convinced of the importance and necessity of having a storage of water at a higher level, I have latterly made careful enquiries as to the possibility and expediency of raising the walls of the present Reservoirs ten feet higher.

My first step was to ascertain the dimensions and strength of these walls and embankments so as to compare them with the weight of the water they have to support.

The present wall of the side of the Reservoir next to McGill College, and also that of the curved part at each end, are 28 feet high and 14 feet thick at their base.

These dimensions, without taking into consideration the puddle trench and embankment in the rear, give to these walls a strength to resist the weight of the water tending to overthrow them in the proportion of 2 to 1; which is of course increased by the protection offered by the puddle wall and embankment.

By raising these walls 10 feet higher the proportion of their strength will become ¾ to 1, that is ¼ too little to balance the weight of the water; this lack of strength in this case should have to be made up by increasing the width of the bank and puddle trench, and employing the best kind of masonry.

The rule adopted by the best Engineers for similar constructions is to give to the walls the following thickness: base 7 tenths of the height, at the middle 5 tenths, and at the top 3 tenths, making the proportion of the strength to the weight of the water of about 3 to 1. As to banks, the proportion of their dimensions varies according to the quality of the material used; in high banks made of solid clay the top width is from 20 to 30 feet wide with slopes 2 to 1 and 3 to 1.

According to these rules, and to the practise followed by eminent Engineers in Europe and America, the thickness of the walls of the present Reservoir is not sufficient to warrant, in my opinion, an additional height of ten feet, especially when the material forming the embankment, as in the present case, is composed mostly of rubbish and broken stones. The least leakage through the walls will percolate through such embankment, as has already been the case on several occasions with the present embankment, causing it to subside and rendering its maintenance a continual source of expense.

Another consideration which has guided me in my opinion is that the walls of the present Reservoir, especially that part nearer the foundation, are composed of uncourse rubble masonry, with very large and irregular joints filled up with hydraulic mortar, which, if put under higher pressure, would be very apt to leak and render the stability of the embankment still more questionable.

These stones were taken out of the excavation of the present Reservoir and chosen amongst the best shaped that came out of the unstratified mass of rock that was excavated.

A last consideration which, in my opinion, is the most decisive against the project is the small advantage derived from such costly an improvement.

The surplus quantity of water the Reservoir will contain, if raised ten feet higher, will be only 16 millions of gallons, which are equivalent to a supply of not more than three days for the whole City, while the cost, as may be seen by the subjoined estimate will be $61,500, and on account of its small area compared with its depth; the least drawing off of the water will lower its level so as to make it of very little benefit, unless the pumping at the Wheel house be not interrupted for any length of time.

I might mention here that, for the past five years during the greater part of the months of February and March, it was found impossible to pump any water into the Reservoir on account of the ice on the Aqueduct which retards the speed of the Wheels, and during that period the Reservoir is kept shut off during the day so as to relieve the Pumps of its pressure; it is only during the night that sometimes the water can be forced into the Reservoir.

This extra pressure of 10 feet on the Machinery would render the shutting off of the Reservoir still more necessary during the winter.

I am of opinion that a better plan can be adopted at at the cost of a little more money to supply at a higher level and in a manner more satisfactory, the citizens residing in or above the level of Sherbrooke Street, and also to give them the same protection against fire as their co-citizens below that level. That plan I will endeavor to describe in the second part of my report relating to the cost of a higher level reservoir.

In the present state of the Aqueduct it is not possible to force water from the Wheel House to a higher level than that of the Reservoir on McTavish Street, and as some years may elapse before the pumping power at the Wheel House is increased, yet in the meantime it may be desirable to have a supply of water at a higher level. The object can be accomplished by erecting at the Reservoir a pumping Engine to force the water in a small reservoir at a level of about 200 feet above the present one. Although it may be premature for the present to build a large Reservoir at that level, I would, however, propose to place this new reservoir in a situation such as to admit of its future enlargement, and sufficient land should be at once bought for that purpose. The site proposed is on the properties of Judge Smith and of Mr. Redpath, at the top of Mountain Street. There is at that place an extent of 142¾ acres of land suitable for such reservoir.

I have therefore prepared a plan and estimate of these Works, hoping by this to meet the views of Your Council,

The project is to erect at the present Reservoir on McTavish Street two small pumping high pressure Steam Engines of 25 horse power each, to force the water 215 feet high to the proposed Reservoir which should contain 5 millions of gallons; to lay from the pumping Engine to the said Reservoir a main pipe of 12-inch diameter, and to continue the said main westward through a street proposed to be opened in continuation of that passing in front of Mr. Allan's property to Côte des Neiges Road, on a line parallel with Sherbrooke Street, and connect the said 12 inch main with Sherbrooke Street by pipes of 6-inches diameter at the intersection of Peel, Stanley, Drummond, Mountain, Simpson, Redpath Streets and Côte des Neiges Road. To extend also eastward this 12 inch main on the said Street produced towards St. Lawrence Main Street, branching it off by six inch pipes at Durocher and University Streets and at the Hotel-Dieu Hospital.

I herewith submit a plan shewing the position of Engines, Reservoir, and Pipes, and also an estimate of their cost, which amounts to $99,000, with a probable revenue of $1,870.25. For this probable revenue, I have based my estimate upon the present Water Rates. It will nevertheless be difficult to render this work self supporting, unless a higher rate than the present is paid by the interested parties.

I must remark, that I am not aware of any application demanding (in a pressing manner) this improvement of a higher level Reservoir.

The citizens residing above the level of the reservoir on the foot of the Mountain, have made such arrangements as to be independent of the Water Works, by gathering water in Wells and Tanks. It would then only be those situated on the extreme levels, where the water is supplied by the City Water Works, and who have been greatly inconvenienced by the irregularity of the water supply in the winter months, who may require mostly this improvement, and who in justice may demand from the City a better supply during that time. The remedy to this is, as I have already recommended in a previous report, to erect a Steam Engine at the Wheel House, so as to help the Water Wheels to keep the Reservoir full during the winter months, and maintain the same water supply as in summer.

Before closing this report, I beg to refer again to the importance of securing soon the land necessary for a large storage of water at the level of the present Reservoir, before it gets too high in value. As in a few years, the present Aqueduct will be considerably enlarged, or perhaps altogether renewed, it would be wise for the City to secure before hand, the land necessary for Reservoirs, one site in the western part of the City, and another in the eastern part, so that, should the position of the works be changed, one would be sure to be made available while the land of the other could by re-selling it, bring in its value, and perhaps a good deal more in the case of its not being needed.

I have also subjoined an estimate for enlarging the Coteau Baron Reservoir, to the extent of 20 millions of gallons.

This Reservoir, although on a level lower than the present one, is sometimes found useful, when the Pumping Works are impeded from working.

I have the honor to be,
Gentlemen,
Your most obedient servant,
LOUIS LESAGE,
Superintendent of Water Works.

MONTREAL, December 7th, 1866.

No. 1.—**Estimate** of the cost of Raising the Walls of the present Reservoir 10 feet higher, as well also those of the proposed extension.

DESCRIPTION OF WORK.	QUANTITIES.		RATE.	Amount.
			$ c.	
Course Rubble Masonry in cement (grey stone)................	Cubic Yds.	1074	10.00	$10.740
Course Rubble Masonry in cement (black stone)..............	"	2956	8.00	23.648
Coping cut stones (grey)........	"	235	14.00	3.290
Rubble......................	"	2500	1.00	2.500
Pitching covering slopes of Reservoir.....................	Sqr. Yards	5070	1.00	5.070
Overflow, and Well underneath Valve House...............	Cubic Yds.	314	20.00	6.280
Building for Guardian..........	....	....	....	4.000
Removing and Replacing Iron Railings....................	Lineal Ft.	920	.50	460
				55.988
Additional 10 per cent for contingencies..................	....	....	....	5.598
				$61.586

N. B.—In this Estimate the Walls of the present Reservoir are calculated to be taken down for a depth of 5 feet, and rebuilt anew to the height of 15 feet. All the work to be of the first class rubble masonry with all the beds and joints properly cut so that none of them should exceed one quarter of an inch in thickness. The courses to be not less than 18 inches high and each stone to average a solid content of 9 cubic feet.

No. 2.—**Estimate** of the probable cost for supplying with water the section of the City above the level of the present Reservoir, to the height of 215 feet:—

Reservoir on Judge Smith's property, to contain five millions of gallons..	$47,400.00
Engines, Pumps, Engine House, &c........................	10,000.00
Pipes, Pipe laying, 10.000 feet..............................	32,600.00
	$90,000.00
Add 10 per cent. contingencies.........	9,000.00
	99,000.00

N. B.—To this estimate has to to be added the land purchase.

No. 3.—ESTIMATE of the probable cost of the enlargement of the Reservoir at Cote-à-Baron, to contain 20 millions gallons of water, and also of raising its present level 10 feet higher :—

45,000 cubic yards of excavation, $0.25	$11,250.00
26,000 square yards of stone lining, $0.30	7,800.00
10,000 " " Sodding, $0.01	100.00
Masonry for Pipe connection	1,000.00
300 yards of Brick Drain from Reservoir to Sherbrooke Street, $2.50	750.00
Pipes and Stop Cocks	700.00
House for Guardian	1,500.00
	$23,100.00
Add 10 per cent. for contingencies	2,310.00
	$25,410.00
Land purchase, 319,280 square feet, or 8.65 arpents, at 15c. per foot	47,892.00
	$73,302.00

Estimate for enlarging the same Reservoir to the extent of the land owned by the Corporation at that place.

18,200 cubic yards of excavation, $0.25	$4,550.00
4,200 square yards of stone lining, $0.30	1,260.00
3,000 " " sodding, $0.01	30.00
Masonry for Pipes	1,000.00
House for Guardian	1,000.00
	$7,840.00
Add contingent 10 per cent	784.00
	$8,624.00

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FOR THE

YEAR ENDING 31st JANUARY, 1868.

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OF THE

SUPERINTENDENT OF THE MONTREAL WATER WORKS,

FOR THE YEAR ENDING JANUARY 31st, 1868.

To the Chairman and Members
Of the Water Committee.

GENTLEMEN,

In accordance with the order of the Council, I beg to submit to your Honorable Body a Report of the operations of the Water Works during the past year, with a statement of their present condition, and what is deemed necessary for current repairs.

AQUEDUCT.

The Berm and side ditches have been mostly all cleaned; some of the fences which were thrown down by the surface water, on McDonald's Farm during the thaw of last spring, have been set up; and the necessary repairs done to the rest of the fences on the whole line.

The stone lining of the Aqueduct is in no worse condition than last year. The few small slides that took place some years ago in the stone lining have not increased, but the ice has every year disturbed more or less some of the stones at the Water Line. To make these repairs it will be necessary to lower the water for several days, and stop the pumping. As they are not yet very pressing, they have been neglected until a better opportunity is afforded to work at them.

All the Repairs have been done to the Berms and Banks wherever these have been injured by the water or the frost. Several of the Farm Bridges have had new flooring, and one at Dumbary's Farm was renewed entirely. This Bridge, which was laid very low over the deepest cut of the Aqueduct, was every winter much loaded with snow. This had the effect of deflecting greatly the girders, and of loosening the joints of the braces.

This new Bridge has been laid in the same place as the old one, but at a higher elevation. Another Farm Bridge at Ogilvie's Farm has one of its girders broken across, and threatens to fall into the Aqueduct. Steps will be taken as soon as possible to have it removed this spring. This Bridge being situated at a part of the Aqueduct where the banks are very high and not very strong, I would recommend that its position be changed to a more convenient place. It is also the wish of the proprietor of the farm to effect this change.

The extension of the Telegraph Line to the entrance of the Aqueduct has been completed. This improvement has been a great advantage to the Department during this winter, by enabling it to get daily prompt information of the state of the Water levels at the entrance.

The Water levels, which are contained in the Schedule on the three following pages, show that this winter the water of the St. Lawrence has been lower than in any year since the beginning of the operations of this Aqueduct. Schedule No. 1 in Appendix indicates the levels of the water of the St. Lawrence from the mouth of the Tail Race up to the old Lachine Church during the winter months. These levels have been taken daily at about the hour of 9 o'clock in the morning by the men employed on the Aqueduct. Their datum is the low water in the harbour.

MONTH.	YEAR.	ELEVATION IN FEET ABOVE LOW WATER MARK IN THE HARBOUR.						RESERVOIR DEPTH IN FEET.		
		ENTRANCE OF AQUEDUCT.			WHEEL HOUSE.			Highest.	Lowest.	Average.
		Highest.	Lowest.	Average.	Highest.	Lowest.	Average.			
September	1861				37.50	35.88	36.83	24.00	20.50	23.33
October	"	38.45	38.00	38.16	37.50	36.55	36.99	24.00	22.00	23.34
November	"	38.55	37.85	38.13	37.19	36.00	36.69	24.00	23.00	23.76
December	"	38.45	37.60	38.02	37.60	35.40	36.80	24.00	13.50	20.88
January	1862	41.05	38.75	38.90	37.63	34.93	36.19	24.00	16.11	21.76
February	"	39.85	38.60	39.32	37.38	35.30	36.81	24.00	21.33	22.91
March	"	39.65	37.45	38.34	36.96	34.97	36.20	21.50	11.25	17.63
April	"	41.27	36.90	38.83	37.65	36.07	36.69	24.00	9.16	18.15
May	"	41.02	39.50	40.36	37.48	36.67	37.08	24.00	21.50	23.37
June	"	39.52	38.32	38.08	37.45	36.40	36.98	24.00	19.08	23.46
July	"	38.35	37.52	38.08	37.25	36.47	36.98	24.00	20.58	23.29
August	"	38.15	37.70	37.88	37.23	36.30	36.97	24.00	22.00	23.37
September	"	38.05	37.57	37.75	37.45	36.44	36.99	24.00	21.75	23.31
October	"	38.25	37.25	37.77	37.41	36.75	37.07	24.00	22.33	23.35
November	"	38.32	37.60	38.03	37.25	35.90	36.98	24.00	6.25	21.96
December	"	38.25	37.30	37.62	37.30	36.45	37.04	24.00	9.00	20.53
January	1863	38.25	36.30	37.42	37.55	35.30	36.67	24.00	21.50	23.20
February	"	37.65	36.60	37.27	37.10	35.55	36.41	24.00	21.10	22.78
March	"	37.80	36.50	37.00	36.78	35.28	35.86	22.75	19.00	21.03
April	"	40.72	37.17	39.07	37.61	36.32	36.89	23.75	21.25	22.34
May	"	40.47	39.27	39.96	37.40	36.90	37.34	24.00	19.50	22.76
June	"	39.35	38.35	38.98	37.22	36.82	37.03	24.00	18.58	22.67
July	"	38.55	37.90	38.24	37.20	36.80	37.01	24.00	13.50	22.58
August	"	38.20	37.42	38.06	37.30	36.80	37.04	24.00	15.00	21.69
September	"	37.60	37.20	37.39	37.20	36.80	37.02	24.00	22.16	23.45
October	"	37.57	37.07	37.39	37.20	36.87	37.04	24.00	18.91	23.06

MONTH.	YEAR.	ELEVATION IN FEET ABOVE LOW WATER MARK IN THE HARBOUR.						RESERVOIR DEPTH IN FEET.		
		ENTRANCE OF AQUEDUCT.			WHEEL HOUSE.			Highest.	Lowest.	Average.
		Highest.	Lowest.	Average.	Highest.	Lowest.	Average.			
November	1863	38.47	37.30	37.89	37.22	36.93	36.77	24.00	22.66	23.68
December	"	38.47	37.30	37.86	37.35	36.77	37.11	24.00	22.92	23.29
January	1864	38.12	35.87	37.04	37.35	35.05	36.26	24.00	22.58	23.43
February	"	37.05	36.25	36.77	36.85	35.03	35.82	24.00	18.16	21.32
March	"	37.40	36.55	37.01	37.07	35.09	36.36	24.00	17.33	20.81
April	"	40.62	36.65	38.87	37.17	36.03	36.63	24.00	22.33	23.41
May	"	41.80	40.17	40.98	37.31	36.17	36.72	24.00	21.50	23.29
June	"	40.57	38.40	39.33	36.80	36.12	36.47	24.00	10.25	21.65
July	"	38.60	37.70	38.71	36.65	35.45	36.38	24.00	21.00	23.26
August	"	37.70	37.30	37.51	36.72	36.35	36.56	24.00	17.50	22.91
September	"	37.50	37.02	37.21	36.80	36.30	36.55	24.00	21.50	23.47
October	"	37.95	37.10	37.58	36.93	36.43	36.69	24.00	22.41	23.49
*November	"	38.60	37.55	38.15	36.89	36.45	36.70	24.16	13.00	21.29
December	"	39.20	36.77	38.27	37.48	36.67	37.39	24.00	21.50	23.21
January	1865	38.22	36.90	37.37	37.20	35.55	36.37	24.00	17.25	21.68
February	"	37.10	36.10	36.58	36.25	35.06	35.60	22.00	16.75	20.70
March	"	39.29	35.90	37.13	37.76	35.10	36.12	24.33	20.70	22.80
April	"	40.30	39.40	39.92	37.40	36.34	36.77	24.00	16.50	22.77
May	"	40.60	39.92	40.33	36.97	36.46	36.73	24.50	15.91	21.69
June	"	39.77	38.40	38.91	37.17	36.33	36.85	24.00	14.50	21.16
July	"	38.77	38.17	38.48	37.30	36.80	37.03	23.66	13.47	20.48
† August	"	38.20	37.35	37.76	37.15	36.77	36.97	23.05	21.75	22.65
September	"	37.47	36.62	36.91	37.10	36.20	36.48	23.00	18.97	22.14
October	"	36.95	35.97	36.50	36.92	35.60	36.15	23.00	19.88	22.56
November	"	36.75	36.02	36.49	36.68	35.22	36.15	23.05	20.90	22.44
December	"	36.70	35.85	36.59	36.60	35.18	35.24	23.10	18.70	22.09

* Water drawn out of the Aqueduct to take away Coffer Dam on 23rd.   † New Rod for gauging at Reservoir

MONTH.	YEAR.	ELEVATION IN FEET ABOVE WATER MARK IN THE HARBOUR.						RESERVOIR DEPTH IN FEET.		
		ENTRANCE OF AQUEDUCT.			WHEEL HOUSE.			Highest.	Lowest.	Average.
		Highest.	Lowest.	Average.	Highest.	Lowest.	Average.			
January	1866	36.90	35.90	36.10	36.21	33.74	35.28	23.00	17.60	21.41
February	"	36.70	33.10	35.45	36.31	31.89	33.60	21.75	5.50	11.68
March	"	36.90	36.10	36.43	35.35	31.72	33.25	7.50	4.60	5.49
April	"	40.27	35.92	38.08	37.06	34.01	35.98	22.90	6.10	16.89
May	"	39.87	38.45	38.90	37.10	36.54	36.79	22.90	20.55	22.54
June	"	39.42	38.42	38.91	37.13	35.62	36.59	23.10	20.00	22.13
July	"	38.57	37.42	37.91	36.67	35.55	36.11	23.05	16.57	21.28
August	"	37.87	37.22	37.44	37.04	36.05	36.57	23.10	19.95	22.22
September	"	38.35	37.30	37.82	36.97	36.67	36.79	23.00	21.45	22.28
October	"	38.20	36.90	37.43	37.12	36.58	36.83	23.02	20.45	22.10
November	"	39.12	37.25	38.10	37.27	36.89	37.09	23.00	16.52	21.01
December	"	39.47	37.07	38.32	37.43	36.67	37.05	23.02	15.47	20.68
January	1867	39.40	36.25	38.31	36.80	36.10	36.24	23.10	14.50	20.64
February	"	39.00	37.65	38.60	36.15	36.10	36.10	22.95	22.20	22.59
March	"	38.40	37.40	37.87	36.17	35.90	36.02	23.00	19.81	21.96
April	"	38.75	37.70	38.37	37.30	35.95	36.94	23.10	21.15	22.62
May	"	40.77	39.80	40.58	37.22	37.00	37.18	23.10	22.85	22.98
June	"	40.77	39.50	40.22	37.26	36.60	37.03	23.00	13.00	20.15
July	"	39.40	38.15	38.70	37.33	36.58	37.02	23.10	20.00	21.96
August	"	38.10	37.30	37.64	37.40	36.83	36.97	23.10	17.62	21.27
September	"	37.40	36.60	37.04	37.45	35.59	36.52	23.10	5.90	17.36
October	"	36.85	36.35	36.63	36.34	35.67	36.15	23.10	13.62	22.41
November	"	36.82	36.07	36.39	36.40	35.42	35.91	23.10	21.50	22.84
December	"	37.90	35.85	36.79	36.61	35.41	35.82	23.10	19.20	21.82
January	1868	37.75	35.60	36.62	35.57	35.30	35.45	23.10	19.00	21.58
February	"	37.30	35.00	36.14	35.37	34.40	35.13	19.75	10.70	15.12

The continual low temperature during this winter has had the effect of thickening the ice so much that on the 9th of this month, the ice on the Aqueduct had a thickness of 5½ feet at 100 yards below the Entrance Bridge, leaving a passage for water of only 54.00 square square feet. On the same day at the first Culvert the ice was 3½ feet thick; water area 120 square feet; at the Stop Gate ice was 3½ feet, water area 167 square feet; at Ogilvie's Bridge, ice three feet, water area 138.14 square feet; at St. Pierre Bridge, 3½ feet, water area 115.20 square feet; one hundred feet above Settling Pond, 3¾ feet, water area 83.80 square feet.

This state of things has been the cause of a great deal of inconvenience and expense to the city in procuring the water supply. Steps are being taken to put the matter into the hands of competent Engineers, to report at an early date what are the best means to remedy this evil.

I beg your Committee will make every effort possible to carry into execution during the coming season the most suitable project recommended by the Engineers.

The expenses incurred during the year on the Aqueduct are as follows:—

Repairs to Fences, Bridges, Banks, Ditches, &c...	$583.11
New Bridge at Dumbary's Farm.................. ..	406.35
Extension of Telegraph...........	417.80
Sundries...	321.23
Keeper's Salary..	399.97
	$2,128.46

WHEEL HOUSE.

The Wheel House and Pumping Machinery are all in good order. The wheels and pumps having worked satisfactorily during the whole year, considering the lowness of the water in the Aqueduct. The repairs done were:—Replacing the valve on the inlet main of the pumps of the turbine wheel by a new one made on a different plan from the old one, and also to place on the same inlet main two new air vessels. Last spring one of the valve casings of the pumps of breast-wheel No. 1 sprung a leak, caused by a crack in the casting, which was repaired by a strong iron bolt passing through it.

In my last year's Report I mentioned the difficulties experienced during the Winter in using the sluice gates of the Waste Weir at the South end of the Wheel House, on account of these gates being exposed and clogged with ice. I then suggested to have them covered over, but nothing has been done. I hope this year means will be taken to remedy the evil.

The following tables show the duty of each wheel and the amount of oil, tallow and fuel used upon the works during the year:—

SCHEDULE shewing the duty of Turbine Wheel.

MONTH.	Revolutions.	Number of Gallons Pumped.	Olive oil in Gallons.	Tallow in Lbs.	Coal oil in Gallons.	Coal for Fuel.
1867.						
February	346,933	84,464,152	10.86	16.4	6.34	10,440
March	24,373	6,288,234	1.94		0.62	9,179
April	11,084	2,859,672	0.55		0.22	4,842
May	96,585	24,918,930	3.61		2.48	
June	275,138	70,985,604	12.04		3.43	
July	413,147	106,591,926	15.55		4.03	
August	119,016	30,706,128	3.88	5.0	2.01	
September	222,643	57,441,894	6.94	0.4	2.49	
October	476,041	122,818,578	9.92		5.30	
November	105,109	27,118,122	3.61	4.0	1.87	2,846
December	224,594	57,945,252	10.27	4.0	3.74	7,700
1868.						
January			0.88			6,912
Total	2,314,663	592,128,492	80.05	29.8	32.53	41,919
Last Year	3,862,514	996,528,612	153.86	88.10	87.54	40,588

SCHEDULE showing the duty of the Two Breast Wheels.

MONTH.	Revolutions. Wheel No. 1.	Revolutions. Wheel No. 2.	Total No. of Revolutions.	Number of Gallons Pumped.	Olive Oil in gallons.	Tallow in lbs.	Coal Oil in gallons.	Coal for Fuel in lbs.
1867.								
February	209,133	209,598	418,731	61,972,188	5.61	10.07	6.17	10,352
March	481,488	487,235	968,723	143,371,004	8.30	4.00	9.38	9,742
April	584,188	582,467	1,166,655	172,664,940	8.60	4.08	8.16	7,531
May	399,542	539,080	938,622	138,916,056	7.97	6.00	9.65	3,576
June	521,670	222,330	744,000	110,112,000	8.56	20.12	5.30	......
July	393,532	238,590	632,122	93,554,056	10.01	30.08	3.76	......
August	584,071	480,959	1,065,030	157,624,440	13.05	35.00	3.43	......
September	265,647	460,912	726,559	107,530,732	8.05	11.11	4.05	......
October	371,926	176,529	548,455	81,171,340	8.33	4.12	5.61	4,680
November	368,733	484,336	853,069	126,254,212	10.00	......	6.86	7,298
December	278,555	318,234	596,789	88,324,772	7.50	2.0	5.61	9,132
1868.								
January	233,908	533,830	767,738	113,625.224	10.55	4.00	10.29	10,120
Total	4,692,393	4,734,100	9,426,493	1,395,120,964	106.53	130.58	78.27	62,431
Last Year	2,547,185	2,600,245	5,147,430	761,819,787	90.84	22.10	64.65	54,958

The expenditure during the year at the Wheel House is as follows:—

Repairs to Machinery	$ 5,209.91
Oil, Tallow, Fuel, &c	2,680.86
Staff Salary	2,874.63
	$10,765.40

TAIL RACE.

The Tail Race is in good condition, only a few repairs having been required to the banks, fences and ditches.

The amount expended on that item is as follows:—

Repairing banks, ditches, fences	$ 14.00
Keeper's Salary	234.00
	$248.00

PIPE TRACK.

The second line of 24-inch rising main has been completed during last summer by Messrs. J. O'Donnell & Frs. Soucisse, Contractors, who have performed their work in a satisfactory manner and at a low figure. This pipe has been laid on that part of the pipe track from Moffatt's Hill, on Dorchester Street, to the McGill College, at the foot of the Reservoir, making a total length of 9,500 feet. At the corner of St. Catherine and McGill College Avenue a connection has been made to join this main with the 24-inch main distributing water into the city from the Reservoir; so that by this arrangement the second rising main can, like the first one, be used if required to pump water directly into the city without going to the Reservoir. Since the completion of the work in September last these two mains have been constantly in operation, and have had the effect of reducing the friction of water through them, so that the pressure gauge indicates 5 lbs. less per square inch, when the pumps are working at the level of the Reservoir with two wheels.

The question of damages between the Hon. Judge Coursol and the Corporation was settled last fall after a good deal of negociation. By the present arrangement the Corporation has acquired from the Judge a strip of land of about 50 feet wide all along that part of the pipe track, contiguous to his property, containing 97,744 square feet, for the sum of $13,004.25, and a further sum of $2,254 has also been paid him as a compensation for all damage suffered by him, and for also assuming the maintenance of all fences and ditches on that part of the pipe track adjoining his property. By this means a broad avenue may be open on the pipe track from Bonaventure to Dorchester Street, and should be extended from Bonaventure to St. Joseph Street. For this purpose it will be necessary to acquire another strip of land of 50 feet wide to enlarge that part, which is only 40 feet broad at present, and too narrow to lay another pumping main, should the city soon require it. This part of the land, which now belongs to Messrs. Delisle and Workman, is getting sold very fast in lots, and will soon be built upon. I would therefore recommend that measures be taken to secure this land before it is too late.

The expenses incurred during the year on this part of the works are as follows:—

Repairing Road, Fences, &c.	$177.33
Rising Main, including cost of pipes and laying, &c.	$16,758.84

RESERVOIRS.

The Resorvoir on McTavish Street is in good condition. Two cast-iron waste pipe, with stop-cocks, have been laid in the bottom of the well of the sluices, in order to allow each side of the Reservoir to be emptied as required, without stopping the supply to the City. As soon as this had been done the Reservoir was emptied, one side at a time, which had not been done since its completion, twelve years ago. Only a thin coating of mud of about half inch thick, and a quantity of small fish, mostly perch, were found in the bottom; a clear proof of the purity of the water supplied to the City.

The extension of this Reservoir is still being carried on.

A new contract for the excavation of 6,000 toises of stones for the use of the Road Department has been awarded to Mr. G. Bowie, jr. The first Contractor, Mr. H. Bogue, having failed to complete his work in time, it was taken off his hands after he had taken out 14,045 cubic yards of earth, and 3,905 toises of stones.

The wooden fence at the back of the Reservoir forming with the iron railing the enclosure of the water area, has been removed from its position, and set on the top of the coping of the back wall, so as to allow room for excavation.

The amount expended on this Reservoir is as follows:

Repairs and Fuel..	$220.75
Keeper's Salary..	458.36
	$679.11

The Coteau Baron Reservoir is still in pretty good condition, and has been in operation part of the winter during the scarcity of the water. It is now empty, and cannot be filled before the month of April. Its contents were only sufficient for a few nights' consumption.

A good many repairs were done to the fences during last summer, amounting to the sum of $370.79.

SCHEDULE shewing the level of Water, the Rain and Evaporation at the McTavish Street Reservoir, for 1867 :—

MONTH.	Average Monthly Depth.	RAIN GUAGE.				Evaporation in Inches.
		Rain.	Snow.	Reduced to Rain.	Total Rain.	
		Inches.	Inches.	Inches.	Inches.	
February	22.59	1.31	9½	0.78	2.09	1.50
March	21.96	0.95	18	0.39	1.34	2.06
April...........	22.62	4.18	7½	0.12	4.30	1.84
May	22.98	6.73	....	....	6.73	2.15
June............	20.15	1.42	....	....	1.42	5.53
July	21.96	4.82	....	....	4.82	6.15
August	21.27	2.16	....	....	2.16	5.58
September	17.36	3.10	....	....	3.10	3.23
October.........	22.41	3.70	....	....	3.70	3.24
November.......	22.84	1.36	5¼	0.31	1.67	1.93
December.......	21.82	1.47	17½	1.06	2.53	1.72
1868.						
January	21.58	....	12	0.30	0.30	1.88
Total....	....	31.20	69¾	2.96	34.16	36.81
In 1866..........	....	35.92	46½	4.24	40.16	34.58

PIPE LAYING.

The total length of cast iron main pipes laid in the city during the year 1867, amounts to 19,882 lineal feet, that is, 9,260 lineal feet of 24-inch pipe; 6,303 lineal feet of 6-inch pipe; 4,319 feet of 4-inch pipe; 5 stop cocks of 24-inch; 9 stop cocks of 6-inch and 8 of 4-inch, and 8 fire hydrants. There has been also 307 service lead pipes laid to new dwellings.

The total length of cast iron pipes laid in the city up to date, including the new pumping main, as shown by the following schedule, is 37,549 lineal feet of 24-inch; 2,650 of 16-inch; 14,384 of 12-inch; 34,070 of 10-inch; 7,460 of 8-inch; 134,975 of 6-inch; 248,383 of 4-inch cast iron pipes with 3,185 lead main pipes, forming a total of 472,566 lineal feet of main pipes, or 89·50 miles.

There are now laid 16 24-inch stop cocks; 3 16-inch; 21 12-inch; 32 10-inch; 9 8-inch; 148 6-inch; 379 of 4-inch, and 32 2½-inch stop cocks, making a total of 641.

There are 571 fire hydrants, including 31 private ones.

The total number of houses supplied with water is 12,560.

It will be seen by the inventory that there is scarcely any main cast iron pipe on hand. Steps are to be taken, I hope, to procure soon a large quantity of main pipe to supply the new houses that are being erected every year, and renew the mains of St. James, St. Francois Xavier, St. Peter and St. Sacrament Streets, which are rendered too small for the supply of these streets.

The expenditure on pipe laying has been as follows :—

Cast-Iron Works	$6,073.92
Brass Work	882.92
Lead Pipes and other Lead	1,508.42
Brick, Cement and Wood	3,241.80
Wages for Laying Pipes	5,588.35
	$17,295.41

SCHEDULE showing the Pipes, Hydrants, Stop Cocks, Services, &c., laid down in the City of Montreal during the year 1867:—

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe in feet.	Weight of Lead Pipe in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
EAST WARD.												
Jacques Cartier S. (Jet d'Eau)....	....	......	......	....	....	....	..	....	....	5	9	....
St. Amable......	....	......	......	....	....	....	..	....	3	42	133	3
Champ de Mars..	....	......	......	....	....	....	..	....	1	17	54	1
St. Paul.........	....	......	......	....	....	....	..	....	1	25	79	1
Notre Dame.....	....	......	......	....	....	....	..	....	....	20	63	2
Total.......	....	......	......	....	....	....	..	....	5	109	338	7
CENTRE WARD.												
Notre Dame.....	....	......	......	....	....	....	..	....	13	423	1339	16
St. Lambert.....	....	......	......	....	....	....	..	....	3	99	313	3
St. Frs. Xavier ..	....	......	......	....	....	....	..	....	1	25	83	1
Fortification.....	....	......	......	....	....	....	..	....	2	45	143	4
Total.......	....	......	......	....	....	....	..	....	19	592	1878	24
WEST WARD.												
Hospital........	....	......	......	....	....	....	..	....	2	57	180	2
Great St. James..	....	......	......	....	....	....	..	....	....	23	73	1
Victoria Square (Jet d'Eau)....	....	......	......	....	....	....	..	....	....	4	13	4
Fortification.....	....	......	......	....	....	....	..	....	1	19	60	1
St. Nicholas.....	....	......	......	....	....	....	..	....	1	39	114	1
McGill..........	....	......	......	....	....	....	..	....	2	81	257	3
Notre Dame.....	....	......	......	....	....	....	..	....	2	82	260	2
Victoria Square..	....	......	......	....	....	....	..	....	1	86	272	2
Craig	....	......	......	....	....	....	..	....	3	163	516	3
Total.......	....	......	......	....	....	....	..		12	554	1745	19
ST. ANN'S WARD.												
William	....	......	......	....	1	1	..		2	77	144	2
Longueuil Lane.	....	83	83	....	1	1	..		2	38	122	3
Manufacturers...	....	......	......	....	....	....	..		1	44	140	1
Grand Trunk....	....	......	......	....	....	....	..		1	29	92	1
Queen	....	......	......	....	....	....	..		2	54	199	2
Richardson	....	......	......	....	....	....	..	....	5	172	545	6
Centre..........	....	......	......	....	....	....	..	....	5	191	604	5
Dalhousie.......	....	......	......	....	....	....	..	....	1	32	101	1
St. Thomas......	....	......	......	....	....	....	..	....	1	54	171	1
Magdelen	....	306	306	....	....	....	..	....	3	62	196	3
King	....	......	......	....	....	....	..	....	2	53	168	2
St. Maurice......	....	......	......	....	....	....	..	....	1	20	63	1
Basin...........	....	.....	......	....	....	....	..	....	1	59	187	1
Congregational..	. ..	707	707	....	....	....	..	....	1	36	113	2
Carried Forward.	....	1096	1096	....	2	2	..	2	28	921	2845	31

Schedule showing the Pipes, &c., laid down—(Continued.)

Names of Streets.	Length in Feet of Cast-Iron Pipes.			Number of Stop Cocks.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe in feet.	Weight of Lead Pipe in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l						
Brought Forward.	....	1096	1096	....	2	2	..	2	28	921	2845	31
Island	....	......	......	....	....	....	..	....	2	18	63	2
Forfar	....	......	......	....	....	....	..	....	2	59	187	2
Colborne	....	......	......	....	....	....	..	....	1	19	60	1
Seigneurs	....	......	......	....	....	....	..	....	2	148	469	2
Sebastopol	....	......	......	....	....	....	..	....	2	52	164	3
St. Henry	....	......	......	....	....	....	..	....	1	12	38	1
St. Joseph	....	......	......	....	....	....	..	....	1	34	108	1
Richmond	....	......	......	....	....	....	..	....	3	116	367	4
Smith	....	......	......	....	....	....	..	....	1	14	44	1
Mill	....	......	......	....	....	....	..	....	1	21	98	1
Total	....	1096	1096	....	2	2	..	2	44	1414	4443	49
St. Antoine Ward												
Richmond	....	......	......	....	....	....	..	....	1	35	111	1
Peel	....	......	......	....	....	....	..	....	2	52	171	2
St. Alexander	....	......	......	....	....	....	..	....	1	39	124	1
Lagauchetiere	....	......	......	....	....	....	..	....	1	40	127	1
Mansfield	....	102	102	....	....	....	..	....	4	158	500	4
Victoria	....	......	......	....	....	....	..	....	15	594	1881	15
Scotland	....	106	106	....	....	....	..	....	4	96	304	4
Canning	....	......	......	....	....	....	..	....	2	66	209	2
Richmond Square	....	......	......	....	....	....	..	....	1	161	510	1
Roy Lane	....	......	......	....	....	....	..	....	2	83	263	2
Lusignan Lane	....	......	.....	....	....	....	..	....	1	23	73	1
Busby Lane	....	......	......	....	....	....	..	....	1	21	67	1
St. Antoine	....	85	85	....	....	....	..	....	4	91	288	4
Chaboillez	....	......	......	....	....	....	..	....	1	23	73	1
St. Bonaventure	....	......	......	....	....	....	..	....	6	290	954	7
St. Martin	....	......	.....	....	....	....	..	....	4	180	569	6
Mountain	....	......	......	....	....	....	..	....	3	112	354	3
St. Margaret	....	......	......	....	....	....	..	....	1	14	44	1
Latour	....	......	......	....	....	....	..	..	1	34	108	1
Seigneurs	....	......	......	....	....	....	..	....	2	71	225	2
Albert	1260	......	1260	2	....	2	1	3	4	150	475	8
Metcalfe	....	......	......	....	....	....	..	....	4	147	466	4
Guy	....	......	......	....	....	....	..	....	4	276	872	6
Drummond	....	......	......	....	....	....	..	....	2	78	248	2
St. Frs. de Salles	....	......	......	....	....	....	:	....	1	71	225	2
Workman	....	27	27	....	....	....	..	....	2	84	226	3
McGill Col'ge Av.	3	......	3	1	....	1	1	2	....	......	......	....
Delisle	....	461	461	....	....	....	..	....	....	......	......	....
Chaboillez Square	....	144	144	....	....	....	..	....	1	99	314	1
Aylmer	....	......	......	....	....	....	..	....	1	32	101	1
Sherbrooke	....	......	......	....	....	....	..	....	1	89	282	1
Durocher	....	......	......	....	....	....	..	....	1	20	63	1
Dorchester	....	......	......	....	....	....	..	....	2	188	595	2
St. Catherine	....	......	......	....	....	....	..	....	8	366	1159	8
Total	1263	925	2188	3	....	3	2	5	88	3783	11981	99

SCHEDULE showing the Pipes, &c., laid down—(Continued.)

NAMES OF STREETS.	LENGTH IN FEET OF CAST-IRON PIPES.			NUMBER OF STOP COCKS.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe in feet.	Weight of Lead Pipe in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l						
ST. LAWRENCE WD												
St. Lawrence....	....	......	......	....	....	....	..	....	1	34	108	1
Plateau..........	....	......	......	....	....	....	..	....	1	37	117	1
St. Chs. Borromée	....	......	......	....	....	....	..	....	1	22	70	1
St. Urbain	....	......	......	....	....	....	..	....	4	160	507	4
St. Catherine....	....	......	......	....	....	....	..	....	1	40	127	1
Craig...........	....	......	......	....	....	....	..	....	4	162	513	5
Vitré............	....	......	......	....	....	....	..	....	1	21	67	1
Sherbrooke......								....	1	33	105	1
Bleury..........	2	......	2	1	....	1	..	1	1	176	557	2
Bronsdon	....	......	......	....	....	....	..	....	1	13	41	1
St. George	....	......	......	....	....	....	..	....	4	98	310	5
Anderson	....	......	......	....	....	....	..	....	1	35	111	1
Mance..........	....	......	......	....	....	....	..	....	....	9	28	1
Dorchester......	....	......	......	....	....	....	..	....	1	20	63	1
Total.......	2	......	2	1	....	1	..	1	22	860	2724	26
ST. LEWIS WARD.												
Courville........	....	......	......	....	....	....	..	....	1	33	105	1
Cadieux	....	......	......	....	....	....	..	....	1	26	82	1
St. Elizabeth....	....	......	......	....	1	1	..	1	2	35	111	2
St. Dominique...	....	......	......	....	....	....	..	....	9	219	693	9
Fortier	....	203	203	....	....	....	..	....	9	212	671	9
Mignonne	....	......	......	....	....	....	..	....	1	41	130	2
Craig..........	....	......	......	....	....	....	..	....	1	31	98	1
Sanguinet.......	....	......	......	....	....	....	..	....	2	30	96	2
St. Constant....	....	......	......	....	....	....	..	....	3	44	140	3
St. Lawrence....	....	......	......	....	....	....	..	....	1	23	73	1
Vitré..........	....	......	......	....	....	....	..	....	1	44	139	1
St. Hypolite.....	....	......	......	....	....	....	..	....	2	128	405	3
Ontario	1622	15	1637	3	....	3	2	5	4	215	679	6
St. Denis........	....	......	......	....	....	....	..	....	6	449	1422	7
German	....	......	......	....	....	....	..	....	1	19	60	1
Total.......	1622	218	1840	3	1	4	2	6	44	1549	4904	49
ST. JAMES WARD.												
Dubord	....	......	......	....	....	....	..	....	1	36	114	1
St. André.......	....	......	......	....	....	....	1	1	2	86	272	3
Mignonne.......	....	534	534	....	1	1	1	2	4	242	946	2
Robin..........	....	......	......	....	....	....	..	....	1	65	206	1
Visitation.......	....	......	......	....	....	....	..	....	2	65	206	3
Sherbrooke	944	20	964	....	1	1	2	3	1	27	86	1
Jacques Cartier..	....	......	......	....	....	....	..	....	5	132	418	5
St. Hubert.......	....	449	449	....	....	....	..	....	5	215	682	5
Ontario	2300	......	2308	1	1	2	..	2	....	28	89	1
Beaudry.........	....	......	......	....	....	....	..	....	6	207	656	6
St. Mary........	....	......	......	....	....	....	..	....	2	62	196	2
Montcalm	...	......	......	....	....	....	..	....	9	293	897	10
Viger Square (Jet d'Eau.).......	111	22	133	....	1	1	..	1	....	166	996	....
Lagauchetière...	....	......	......	....	....	....	..	....	1	29	92	2
Total.......	*3363*	1025	4388	1	4	5	4	9	39	1653	5856	42

Schedule showing the Pipes, &c., laid down—(Continued.)

Names of Streets.	Length in Feet of Cast-Iron Pipes.			Number of Stop Cocks.			Hydrants.	Brick Chambers.	Houses Supplied.	Length of Lead Pipe in feet.	Weight of Lead Pipe in lbs.	Brass Stop Cocks.
	6 in.	4 in.	Total.	6 in.	4 in.	Tot'l.						
St. Mary's Ward.												
Panet	....	......	......	....	....	....	..	....	3	204	646	4
Lagauchetière...	....	......	......	....	....	....	..	....	1	31	98	1
Colborne Avenue.	53	......	53	....	....	....	..	....	1	79	250	1
Craig	....	......	......	....	....	....	..	....	1	27	86	1
Brock	....	......	......	....	....	....	..	....	3	120	380	3
Dufresne........	....	......	......	....	....	....	..	....	2	70	222	2
St. Ignace.......	....	......	......	....	....	....	..	....	2	36	114	2
Mignonne	....	......	......	....	....	....	..	....	1	15	48	1
Longueuil Lane Ferry	....	......	......	....	....	....	..	....	2	152	675	1
Durham,........	....	......	......	....	....	....	..	....	2	64	203	2
Barclay..........	....	......	......	....	....	....	..	....	1	22	70	1
DeSalaberry......	....	......	......	....	....	....	..	....	1	22	70	1
St. Catherine....	....	1055	1055	....	1	1	..	1	10	435	1377	12
Visitation	....	......	......	....	....	....	..	....	3	141	446	2
Dorchester......	....	......	......	....	....	....	..	....	1	28	89	1
Total........	53	1055	1108	....	1	1	..	1	34	1446	4774	35
Grand Total...	6303	4319	10622	8	8	16	8	24	307	11960	38643	346
St. Law'nce Glass Works Co., Delisle Street....	....	480	480	....	....	6	1	1	....	......	......	....
Grand Total.	6303	4799	11102	8	8	22	9	25	307	11960	38643	346

N. B.—Rising Main 9347, 24-inch pipe, 5 24-inch Stop Cocks, 1 6-inch Stop Cock, 5 Brick Chambers.

Schedule shewing the Pipes, Hydrants, and Stop Cocks laid down, and the number of Houses supplied with water, in the City of Montreal, up to January, 1868.

Names of Wards.	Length of Main Pipes in Feet.								Total Length of Main Pipes	Number of Stop-Cocks.									Hy-drants.		Brick Chambers.	Houses Supplied.
	24 in.	16 inch	12 in.	10 in.	8 in.	6 inch.	4 inch.	Lead		24 in	16 in	12 in	10 in	8 in	6 in.	4 in.	2½ in	To'l No.	Pri-vate	Pub-lic.		
East	......	....	......	3270	470	5140	6855	380	16115	..	..	..	6	..	6	18	3	33	....	30	61	571
Centre	......	....	......	1272	....	4426	6382	850	12930	..	..	..	1	..	5	16	2	24	2	25	49	438
West	......	630	965	1158	600	4905	8614	430	17302	..	1	2	1	1	7	21	3	36	....	33	66	606
St. Ann's	......	....	6577	1712	620	30834	46553	160	86456	..	..	7	2	1	32	72	1	115	10	100	224	1986
St. Antoine	1060	2020	6818	2478	900	28278	65464	360	107378	2	1	10	4	3	32	88	11	151	....	110	250	2417
St. Lawrence	......	....	......	5562	3250	9345	26926	360	45443	..	..	..	3	3	13	46	5	70	....	56	120	1838
St. Lewis	......	....	......	7917	1620	10214	26139	280	46170	..	..	..	5	1	12	35	5	58	....	63	116	1776
St. James	......	....	......	4778	....	18874	34590½	150	58392½	..	..	..	4	..	17	45	..	66	....	60	126	1687
St. Mary's	......	....	......	5923	....	20561	20287½	215	46986½	..	..	..	6	..	20	30	2	58	4	63	123	1336
Total	1060	2650	14360	34070	7460	132577	241811	3185	437173	2	2	19	32	9	144	371	32	611	16	540	1135	12655
Rising Main	26486	....	24	......	....	15	....	...	26525	17	2	..	..	..	2	....	..	22	....	....	21	3
Grand Trunk R.R., Pt. St. Charles	......	....	......	......	....	2383	2728	....	5111	..	..	..	..	..	2	3	..	5	10	....	15	......
Grand Trunk R.R., St Bonaventure street	......	....	......	......	....	......	545	....	545	..	..	..	..	..	....	2	..	2	2	....	4	......
Montreal City Pass. R. R. Co., St. Mary st.	......	....	......	......	....	......	1015	....	1015	..	..	..	..	..	....	1	..	1	1	....	2	......
Military Government at Hochelaga	......	....	......	......	....	......	2180	....	2180	..	..	..	..	..	....	1	..	1	1	....	2	......
Canadian Rubber Co., St. Mary street	......	....	......	......	....	......	104	....	104	..	..	..	..	..	....	1	..	1	1	....	2	......
St. Lawrence Glass Works Co., Delisle street	......	....	......	......	....	......	480	....	480	..	..	..	..	..	....	....	..	....	1	....	1	......
Total	27546	2650	14384	34070	7460	134975	248863	3185	473133	19	4	19	32	9	148	379	32	643	32	540	1182	12658

REPAIRS.

The accidents to the main distribution pipes, fire hydrants and stop cocks have been fewer in 1867 than in the previous year, as shown by the next schedule.

There have been 11 breaks and 8 leaks on the main distributing pipes, making in all 19 against 43 of last year.

There have been also two stop cocks and five hydrants repaired.

SCHEDULE shewing the Repairs done to Main Pipes, Hydrants & Stop Cocks, during the year 1867.

POSITION.	DATE. 1867		DIAMETER.	STOP-COCKS.	HYDRANTS.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF. INJURY.
St. Lawrence and Ontario	Jan.	17			1			Put in a new valve	Wore out
German	April	4	4 in.	1				Put in a new spindle.	Do
Lagauchetiere (St. Louis Ward)	"	10	6 in.			1		Put in a new piece of pipe	Broken across
Panet	"	10	4 in.			1		Do	Do
St. Denis, at Cote a Baron	"	16	12 in.			1		Do	Split pipe
Nazareth	"	18	4 in.			1		Do	Do
St. Gabriel and St. Paul	"	22			1			Replaced by a new one.	Broken
Notre Dame and St. Lambert	"	22			1			Do	Do
Victoria	"	23	4 in.			1		Put in a new piece of pipe	By driving in a nozle
St. Catherine (St. James Ward)	May	2	3 in.			1		Do	By the settling of earth on tunnel work
St. Paul (Gillespie & Moffatt)	"	12		1				Replaced by a new one	Worn out
Bonaventure	"	13	4 in.			1		Put in a new piece of pipe	Split pipe
Common and Prince	"	22			1			Put in a new valve	Worn out
Jacques Cartier	"	22	4 in.			1		Put in a new piece of pipe	By the settling of earth on tunnel work
Cote	"	22	3 in.			1		Do	Do
McCord and Barre	"	22			1			Put in a new valve	Worn out
William, near Eleanor	"	31	6 in.			1		Put in a new piece of pipe	Broken across
Aqueduct	June	21	4 in.				1	Recaulked the joint	Blown out by pressure
Mill	"	26	6 in.				1	Do	Do
Congregation	July	3	6 in.				1	Do	Do
Montcalm	"	15	4 in.				1	Do	Do
McCord	"	3	12 in.				1	Do	Do
Carried over				2	5	10	5		

SCHEDULE shewing repairs done to Main Pipes &c.—(*Continued.*)

POSITION.	DATE. 1867	DIAMETER.	STOP-COCKS.	HYDRANTS.	BREAKS.	LEAKS.	HOW REPAIRED.	PROBABLE CAUSE OF INJURY.
Brought forward........	....	......	2	5	0	5		
Bonaventure	July 7	4 in.	..			1	Recaulked the joint	Blown out by pressure
William	" 23	6 in.	..			..	Put in a new piece of pipe	Split pipe
Aqueduct	Sept. 2	4 in.	..	..			Recaulked the joint	Joint badly made
Commissioners'.............	" 19	6 in.	..	..		1	Do	Blown out by pressure
William	" 16	6 in.	..	..		1	Do	Do
Inspector	" 18	4 in.	..	..		1	Do	Do
William	" 21	6 in.	..	..		1	Do	Do
Aqueduct	" 23	4 in.	..	..		I	Do	Do
Ontario (St. James Ward)......	" 23	6 in.	..	..	I		Put in a new piece of pipe	Split pipe
Delisle	" 30	4 in.	..	..	1	..	Do	Do
McCord	" 30	12 in.	..	..		1	Recaulked the joint	Blown out by pressure
St. Joseph	Oct. 2	6 in.	..	..		..	Put in a new piece of pipe	Split pipe
Mill	" 17	6 in.	..	..	..	1	Recaulked the joint	Blown out by pressure
Wellington	" 18	12 in.	..	..	..	1	Do	Do
Common	" 25	6 in.	..	..	..	1	Do	Do
Dorchester (St. James Ward)..	" 28	10 in.	..	..	..	1	Do	Do
Mill	" 29	6 in.	..	..	..	1	Do	Do
William	Nov. 5	6 in.	..	..	..	1	Do	Do
St. Catherine (St. Antoine W)..	" 6	6 in.	..	..	..	1	Do	Do
Craig (St. James' Ward).......	" 8	6 in.	..	..	..	1	Do	Do
Wellington	" 9	12 in.	..	..	..	1	Do	Do
St. Denis	" 9	10 in.	..	..	..	2	Do	Do
City Councillors'.............	" 19	4 in.	..	..	1	..	Put in a new piece of pipe	Broken across
Total	....	......	2	5	15	24		

During this winter the expenses in keeping the pipes and hydrants in repair have been great owing to the severe frost which has penetrated into the ground to a depth of six feet generally, and in many cases, even seven feet.

This, with the short water supply, has been the cause of many of the service pipes and hydrants having been frozen, and of still freezing every day; so much so that it has necessitated the opening of the streets in a great many places at considerable risk and expense, which is still going on up to this date. The plumbers of the department have been called out 1,437 times, and 54 water carriers are still employed to cart water to the houses in which the water pipes are frozen.

The expenses incurred for repairing the main and service pipes up to the 31st January last are as follows:

Main Distribution Pipes	$1,395.85
Service Pipes	1,694.40
	$3,090.25

The following Schedule indicates the number and positions of hydrants found frozen in the winter of 1866 and 1867, amounting to 108. Owing to the severity of the season the number of hydrants frozen this winter will greatly exceed that of the last.

Schedule shewing the Hydrants found frozen, during the Winter 1866 and 1867:—

By the Rise of Water.		For Want of Sewerage.		By Leaks.		By other Causes.		TOTAL.	
No. of Hydrants.	No. of Times.	No. of Hydrants.	No. of Times.	No. of Hydrants.	No. of Times.	No. of Hydrants.	No. of Times.	No. of Hydrants.	No. of Times.
17	1	12	1	4	1	11	1	44	1
14	2	6	2	2	2	5	2	27	2
7	3	4	3	..	..	4	3	15	3
5	4	1	4	1	4	2	4	9	4
2	5	1	5	..	..	..	..	3	5
2	6	..	..	..	..	..	..	2	6
..	..	2	7	..	..	..	..	2	7
..	..	1	9	..	..	..	..	1	9
..	..	..	..	..	..	1	11	1	11
..	..	1	12	..	..	..	..	1	12
..	..	1	17	..	..	..	..	1	17
..	..	1	22	..	..	1	22	2	22
47	21	30	82	7	7	24	43	108	99

During 1865 and 1866.

1	5	36	107	8	10	82	154	127	276

PUBLIC FOUNTAINS.

All the public fountains have been repaired. A new fountain of fire-brick, and of an elegant design, nineteen feet high, has been erected in the Viger Garden. Two drinking fountains made of polished Scotch granite have also been erected—one at the corner of Notre Dame and St. François Xavier Streets, and the other at the corner of Bleury and Dorchester Streets. Six others of cast iron have been imported from Scotland, to be set up during the course of next summer, in such parts of the city as your Committee may order.

The expenses incurred on this item (not including the new drinking fountains) amount to $1,089.55.

CONSUMPTION OF WATER.

The daily consumption of water in the city during last year has been on an average 5,459,195 Imp. gallons. This average would have been greater had it been possible to afford the full supply during the winter months.

The following Schedule is based upon the quantity of water actually pumped every day. It will be seen that in the month of October last the average daily supply for that month was 6,580,319 Imp. gallons, being the highest average of the whole year; while in September it was only 5,499,087 Imperial gallons. This discrepancy is explained by the fact, that during the latter end of September the wheels were stopped for several days, in order to connect the new rising main to the old one, and also to empty the Reservoirs. The time lost in pumping the daily quantity of water was afterwards made up by working the three wheels simultaneously for the first time, in order to fill up the Reservoirs, and also to test the new rising main. This being done mostly in October, had the effect of increasing greatly the daily average for that month, and to render that of September apparently much less than it actually was ; a more correct result may be obtained by taking the average of these two months.

The Schedule shows also that the consumption of water for 1867 has increased on a daily average of 663,723 gallons over that of the previous year.

In this Schedule are included 647,000 gallons for flooding rinks and washing sewers ; 13,488,160 gallons for watering the streets; 85,000,000 gallons for fire purposes.

Schedule shewing the Average Daily Consumption of Water, in Imperial Gallons, for the Year 1867, compared with that of 1866 :—

MONTH.	Average 1867.	Average 1866.	Increase.	Decrease.	Total Consumption for 1867.
February........	5,229,869	2,219,809	3,010,060	....	146,436,340
March	4,827,717	2,562,627	2,265,090	....	149,659,238
April	5,850,820	4,538,395	1,312,425	....	175,524,612
May	5,284,999	4,538,332	746,667	....	163,834,986
June............	6,036,586	4,708,153	1,328,433	....	181,097,604
July	6,456,322	5,690,600	765,722	....	200,145,982
August..........	6,075,179	5,639,903	435,276	....	188,330,568
September.......	5,499,087	5,478,200	20,887	....	164,972,626
October	6,580,319	5,460,095	1,120,224	....	203,989,918
November	5,112,411	5,625,380	....	512,969	153,372,334
December	4,718,387	5,624,358	....	905,971	146,270,024
1868.					
January	3,665,329	5,286,506	....	1,621,177	113,625,224
Total.......	65,337,025	57,372,358	11,004,784	3,040,117	1,987,259,456
Daily Av'ge 1867.	5,444,752		Monthly Avg. 1867.		165,604,954
" " 1866..	4,781,029		" " 1866.		145,961,139
Av'ge Daily Incr'e	663,723				19,643,815

By the completion of the second rising main, the pumping machinery is capable in summer, when the head water in the Aqueduct is at a level of not less than 37.50 feet, to force daily into the Reservoirs 10,000,000 Imperial gallons if required. On the 18th of September last, however, the three wheels were started, when the level of the water at the entrance of the Aqueduct was only 36.82 feet. They were worked for three consecutive days, forcing daily into the Reservoirs an average of 8,000,000 gallons, being all the work they could perform at that level.

The pumps of the breast wheels were making ten double strokes per minute, and those of the Turbine wheel twelve double strokes.

This state of things indicates clearly that the time has come for the City of Montreal to provide very soon a greater water power for summer as well as for winter, in order to keep pace with the consumption of water, which is increasing, as shown, at the rate of nearly 664,000 gallons daily.

At this rate at the end of two years the City will require the full capacity of the Aqueduct in summer to furnish the water supply.

This Table gives the comparative increase of the water consumption since 1858.

COMPARATIVE SCHEDULE, shewing the daily Consumption for each month, from 1858 to 1867, in the City of Montreal.

DAILY AVERAGE.	1858.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.
January..	2,295,000	3,209,000	3,035,000	3,590,300	4,334,265	3,676,755	4,343,153	4,426,068	4,060,503	4,809,262
February	2,295,000	3,295,000	3,283,000	2,904,760	3,815,390	3,231,875	3,523,169	2,985,838	2,219,809	5,229,869
March..............	2,295,000	3,225,000	3,238,000	2,695,220	2,279,100	3,087,880	3,332,475	3,760,457	2,562,627	4,827,717
April	2,752,000	3,092,000	3,064,000	2,828,870	3,389,637	3,977,615	4,003,223	4,493,937	4,538,395	5,850,820
May	2,780,000	3,221,000	3,032,000	3,149,628	3,715,171	4,307,049	3,855,934	3,187,978	4,538,332	5,284,999
June	3,000,000	3,938,000	3,251,000	3,020,164	3,786,468	4,479,469	4,025,742	4,928,084	4,708,153	6,036,586
July	2,942,000	3,410,000	3,463,000	3,204,260	3,949,056	4,154,671	4,381,352	4,754,354	5,690,600	6,456,322
August..............	2,768,000	3,621,000	3,835,000	3,094,612	3,947,433	4,504,426	4,602,058	5,403,834	5,639,903	6,075,179
September..........	3,026,000	3,065,090	3,417,000	3,611,212	3,738,938	4,526,220	4,239,849	4,974,663	5,478,200	5,499,087
October	2,819,000	3,200,000	3,661,000	3,270,000	3,831,535	4,055,170	4,323,540	4,531,097	5,460,095	6,580,319
November	2,805,000	3,047,000	2,889,000	3,130,980	3,621,323	3,529,333	3,728,530	3,449,815	5,625,380	5,112,411
December	2,900,000	3,117,000	3,250,000	2,254,750	3,748,800	3,624,489	4,213,023	4,332,526	5,624,358	4,718,387
	32,678,000	39,140,000	39,428,000	37,844,756	44,157,116	47,154,952	48,572,049	51,228,651	56,146,355	65,337,025
Daily average for the whole Year.......	2,723,166	3,261,666	3,285,666	3,153,729	3,679,759	3,929,579	4,047,670	4,269,054	4,678,863	5,444,752
Increase...........	....	538,500	24,000	....	526,030	249,820	118,091	221,384	409,809	663,723
Decrease	....	....	.....	131,927	......	....	....	....	....	....

MANAGEMENT.

Statement shewing the various details of the Expenditure of the Montreal Water Works Department during the civic year of 1867, ending the 31st January, 1868.

ADMINISTRATION.

LINE OF AQUEDUCT.

			$ c.	$ c
Paid for repairing fences, bridges, banks, ditches, &c., &c		$ 583.11		
" renewing bridge at Dumbarry's Farm		406.35		
" extension of telegraph to entrance....................		417.80		
" sundries....................		321.23		
" keeper's salary..............		399.97		
			2,128.46	

WHEEL HOUSE.

Paid for air pumps and garden seats...		$ 412.50		
" wire railing and for repairing cog wheel................		179.00		
" repairs to machinery.........		1,207.63		
" new lightning rod............		284.91		
" olive and coal oil....	$ 780.99			
" tallow cotton waste, candles, &c........	193.09			
" fuel.................	374.36			
" sundries............	1,332.42			
" staff's salary........	2,874.63	5,555.49		
" permanent repairs............		3,125.87		
			10,765.40	

TAIL RACE.

Paid for repairing fences, banks, ditches, &c		$ 14.00		
" keeper's salary...............		234.00		
			248.00	

PIPE TRACK.

Paid for breaking stone for macadamizing road		$ 75.00		
" repairing fences, cleaning valves, &c................		102.33		
			177.33	
Amount carried forward..............			13,319.19	

			$ c.	$ c.
Amount brought forward			13,319.19	
RESERVOIR, McTAVISH STREET.				
Paid for repairing fences		$ 5.00		
" fuel and light..............		82.83		
" sundries.....................		132.92		
" guardian's salary............		458.36		
RESERVOIR OF COTEAU BARON.				
Paid for repairing fences		370.79		
			1,049.90	
FIRE HYDRANTS.				
Paid for packing.....................		$ 50.30		
" inspection...................		853.06		
" repairs......................		271.26		
			1,174.62	
DISTRIBUTION PIPES.				
Paid for repairing main pipes..	$352.52			
" " valves	191.10			
" " streets	842.33			
" " serv'e in winter........	672.36			
" " serv'e in summer.......	476.76			
" " footpaths....	545.28	1,694.40		
			3,080.35	
PUBLIC FOUNTAINS.				
Paid for improvements to new fountain on Viger Square..............		$ 973.09		
" repairing the basins of the different public fountains........		116.76		
			1,089.85	
Watching at reservoir and valves......			716.28	
Distributing water through the city....			279.11	
SHOP DEPARTMENT.				
Paid men's wages, &c.................			3,419.28	
Amount carried forward.............			24,128.58	

			$ c.	$ c.
Amount brought forward			24,128.58	
OFFICE.				
Paid officers' salaries..................		$5,600.00		
Paid for assistance in Supt's. office, for turn-cocks, &c.....	$1,090.94			
" asssistance in Acct's. office, for Bailiffs, Recors, &c.........	1,576.26	2,667.20		
" sundries....................		331.10		
			8,598.30	
PRINTING AND STATIONERY.				
Paid for stationery, printing and advertising in Superintend'ts office		$ 443.54		
" stationery, printing and advertising in Accountant's office.		679.51		
			1,123.05	
Rent of workshops and dwellings in Notre Dame Street....................			726.50	
Damages			30.00	
Assessments and school taxes.........			145.20	
WATER WORKS PROPERTY ACCOUNT.				
Paid for survey, &c., on lots at Point St. Charles			280.60	
Contingencies			50.00	
Carriage hire for Sup't........	$515.01			
" " for Committee ..	15.00		530.01	
Repairs to rising main................			23.53	
				35,635.77
NEW DWELLINGS AT WHEEL HOUSE.				
Paid P. H. Morin for erecting buildings for engineers and assistants			5,950.90	
" men's wages.....................			185.03	
" for sundries.....................			50.00	
				6,185.93
PROTECTION OF WATER WORKS.				
Paid for survey		$ 500.71		
" sundries		197.17		
			697.88	
Amounts carried forward.............			697.88	41,821.70

		$ c.	$ c
Amounts brought forward		697.88	41,821.70
PIPE LAYING.			
Paid John McDougall for hydrant, stopcocks and different castings	$6,073.92		
" Robert Mitchell & Co. for brass works	882.92		
" Morland, Watson & Co. for lead pipe	954.78		
" James Robertson for lead pipe	553.64		
" sundries	2,435.55		
" R. H. Hamilton for duty on cast iron pipes	806.25		
" men's wages laying pipes, &c	5,588.35		
		17,295.41	
RISING MAIN.			
Paid R. H. Hamilton for duty on 24-inch pipes from Glasgow	4,670.10		
" John McDougall for castings	3,863.50		
" Denis Dufort for masonry work	499.84		
" for sundries	50.00		
" John O'Donnell and Frs. Soucisse for laying 24-inch pipes, &c	6,770.73		
" for men's wages	904.67		
		16,758.84	
EXTENSION OF RESERVOIR.			
Paid Henry Bogue on his contract for excavating Reservoir	$10,697.39		
" men's wages	343.00		
" sundries	42.00		
		11,082.39	45,834.52
			$87,656.22

INVENTORY OF STOCK AND TOOLS ON HAND JANUARY, 1868.

Cast Iron on Pipe Track and Yard in Campeau Street.

	24in	16in	12in	10in	8 in.	6 in.	4 in.	3 in.
Cast Iron Pipe in feet	297	54	94	198	63	9	....	....
Four Way Branches	....	....	7	1	2	12	17	....
Three " "	....	....	6	2	....	63	34	....
Sleaves	4	2	5	2	5	50	55	16
Taper Pipes	....	1	2	1	6	1	8	....
Elbows	....	..	....	....	....	19	14	....
Double Bends	....	..	....	....	....	16	6	....
Caps	1	4	2	3	3	13	42	....
Plugs	1	1	2	....	....	23	8	....
Stop Cocks	....	2	9	1	2	20	10	....
Fork	1	..	....	....	....	....	....	....

37 Hydrants.
3 Old Hydrants (Water Taps.)
6 Hydrant Posts.
42 do Frames.

53 Hydrant Covers.
12 Plugs for Valve Covers.
3 Small Hydrant Covers.
978 Service Plates.

WORK SHOPS, NOTRE DAME STREET.

BRASS WORKS.

Diameter.	1½ in.	1¼ in.	1 in.	⅝ in.
New Stop Cocks with Couplings	......	......	55	40
Old " "	20	......	12	2
New Elbows with Couplings	......	......	2	76
Old "	4	......	56	3
Single Joints	......	......	26	723
Three Way Branches	......	......	44	57
American Nozles	......	......	......	46
Hydrant Sludge Cocks	......	......	......	20
Beb Cocks	20	10	......	......

3 Brass Hydrants.

16 Valve Spindles, covered with brass.

1 " solid.

1 set of Jet D'eau Fixings.

LEAD PIPE AND OTHER LEAD.

1300 lbs. of 1 inch Lead Pipe.
900 " ⅝ " " "
2000 " 1 " " " in pieces.
600 " ⅝ " " " "

1000 lbs. Bars of Pig Lead.
150 " Scrap Lead.
10 " Solder.

TOOLS AND UTENSILS AT SHOPS, NOTRE DAME STREET.

18 Picks.
17 Shovels.
13 Crow Bars.
20 Hand Spikes.
3 Sledges.
8 Rammers.
2 Wood Saws.
5 Hand Saws.
1 Circular Saw.
2 Axes.
6 Hammers.
5 Chisels.
2 Framing Chisels.
2 Drill Frames.
7 do (old)
150 lbs. C. S. Drills.
2 Grind Stones.
2 Wheel Barrows.
8 Cribs.
60 Buckets.
7 Ratchet Braces.
3 Hand do.
2 Iron Pumps.
1 Fire Engine Pump.
1 Wood Square Pump.
4 Sets Iron Blocks.
1 Set of Rope.
1 Patent Block and Chain.
1 Cable Chain.
4 Wrapping Chains.
2 Boxes Pipe Layers' Tools.
1 Skimmer.
5 Pots for Melting Lead.
3 do. Plumbers.
2 Ladles.
2 Joint Machines.
1 Force Pump.
5 Screw Wrenches.
21 Iron Wrenches.
6 Augers.
11 Augers Bitts "assorted."
1 Brass Set of Augers.
2 Iron do. do.
2 Hand Bells.
30 Valve Keys, assorted.
8 Stop Cocks, do.
7 Hydrant do.
16 American Hydrant Handles.
10 Washers, assorted.
1 Platform Scale.
1 Ballance do.
75 Colored Lamps.
25 Lamps.
1 Adze.
1 Vice.
1 Turning Lathe.
1 Pair Twin Sleighs.
1 Steam Boiler.
80 feet India Rub. Hose for steamer
1 Boiler for Stone.
3 Square Stones.
2 Steam Gauges.
4 Pairs Long Boots.
1 Clock.
1 Spirit Level.
1 Thermometer.
5 Birch Brooms.
8 Oil Cans.
3 Gins.
1 Hydraulic Press.

BLACKSMITHS' TOOLS.

1 Anvil.
1 Beck Horn.
1 Pair Bellows.
1 Portable Forge.
2 Vices.
4 Drill Frames.
42 Pairs Tongs.
33 Heading Tools.
35 Swedges.
80 Mandrills and Punches.
3 Braces.
40 Screw Plates and Dies.
1 Finishing Block and Plate.
1 Copper Stamp.
3 Cold Chisels.
3 Hand Hammers.
1 Sledge.
1 Boring Machine.
1 Set Alphabet Stamps.

WATER METERS.

2 2½ inch Kennedys.
2 ⅝ do. do. (1 damaged.)
1 ½ do. do. do.
2 1 do. Worthingtons.
1 ⅝ do. do.
1 ⅝ do. Aubins.

PATTERNS AND CORE BOXES.

1 set for 1 inch Stop Cocks.
1 " 1 " Nozles.
1 " ⅝ " "
1 " ⅝ " Stop Cocks.
1 " ⅝ " Three Ways.
1 " 1 " "

TOOLS AND UTENSILS—(Continued.)

1 set for 1 inch Single Joints.
1 " ⅝ " "

SUNDRIES.

400 lbs. Iron Bars.
50 " Iron Straps.
50 " Pre'd. Spikes.
200 " Cut Nails.
50 " Cast Steel.
175 " Scrap Iron.
50 " " Brass.
50 " " Zinc.
¾ Ton Old 6 in. Pipe.
1 Ton Old 4 in. Pipe.
135 Service Stones.
50 Double Service Stones.
2 Valve Stones.
26 Hydrant Stones.
610 Rings for Service and Hydrant Covers.
89 Service Boxes.
130 Wood Covers for Service Boxes and Hydrants.
2 Wooden Hydrant Frames.
19 Cedar Posts.
14 Pieces for raising Hydrants.
120 feet 4 in. Earthen Pipe.
28 Lengths of Stone Pipes.
3 Elbows.
50 lbs. Jute Packing.
40 " Rubber Packing.
½ Chaldron Smith Coal.
30 Gallons Coal Oil.
½ " Olive "
15 lbs. Tallow.
5 " Rosin.

WHEEL HOUSE.

1 Copper Hammer.
8 Hand Hammers.
8 Sledge "
3 Rivetting "
25 Screw Wrenches, different sizes.
12 Tap "
2 Socket "
14 Common " "
21 Cold Chisels.
37 Ice "
1 Wood "
1 Lot of Punches.
19 Drills.
2 " Steel.
7 Old Files.
19 New "
1 Small Saw.
2 Cross-Cut Saws.
1 Broad Axe.
21 Crow-Bars.
2 Pinching Bars.
1 Large Lever, 8 feet long.
2 Gate "
1 Puddle Pounder.
14 Picks.
5 Snow Shovels.
4 Coal "
9 Steel Drifts.
10 Pairs Blacksmith Tongs.
2 " Tongs.
10 Sets Tools for Blacksmith.
1 Blacksmith Bolt Plate.
6 Blacksmith Bolt Making Tools.
3 Blacksmith Bellows.
2 Pairs " (old.)
1 Anvil.
2 Bench Vices.
3 Scrapers.
1 Crank Brace.
3 Ratchet Braces.
2 Rymers.
2 Packing Hooks.
1 Eye Hook.
2 Socket Hooks.
6 Soldering Bolts.
17 Eye Bolts.
1 Hydraulic Screw.
1 Jack Screw.
2 Screw Plates.
2 Bucket Straitners.
1 Stock and 3 Set Dies.
10 Steel Caulking Irons.
2 Cast Iron Pots.
2 Lead Pots.
1 Air Pump.
1 " " " Philadelphia."
4 Hand Pumps with spouts.
1 Old Slush Pump, 18 feet long.
5 Swedges.
2 Pad Locks.
2 Locks.
1 Pair Scales, with weights.
1 " Platform Scales with weights.
1 Fairbank Patent Beam Scales. with weights.
4 Ladders.
2 Pair Callopers.
1 Carpenter Level.
1 Carpenter Mallet.
5 Augers.
1 Carpenter Adze.

TOOLS AND UTENSILS—(Continued.)

1 Carpenter Plane.
1 Square.
1 2-feet Grind Stone.
1 Carpenter Sett Stone
4 Pieces heavy Chains.
11 Lifting Chains.
1 Snatch Block.
2 Sets Block and Tackle.
1 Pair Hoisting Block and Chain.
1 Pair, 4 Sheaf Block.
2 New Rakes.
1 Drill Stand and Crank Brace.
8 Crank Handles.
1 Pair, 4-inch Clamps.
1 Screw Clamp.
1 Brass Follower.
3 Cross head Keys.
2 Crab Winches.
1 Wedge Cutter.
3 Chips Gatherers.
1 Lifting Apparatus.
1 Truck for drawing Pipes.
1 Box Pipe Layer Tools.
1 Hose Reel.
4 Pieces new, 2½-in. Leather Hose, each 40 feet long.
13 Glass Tubes for Air Vessels.
½ Doz Oak Bars for cleaning Flume.
2 Writing Desks.
1 Drawing Table.

IRON AND BRASS WORKS.

2 Brass duplicate valves for Turbine.
1 12 inch Valve.
4 Brass Pump valves.
6 Old 12 inch Valves.
656 lbs Old Bolts, nuts, &c.
15 Wrought Iron Bolts.
29 Bolts and Nuts, 1¼ x 7.
9 Brass Bolts.
8 2-inch Bolts and nuts from Pillow Block.
1 Box ⅝ Rivets.
1 Keg ⅝ "
½ Keg 6-inch Spikes.
½ Keg Steel Borings.
2 4-in Iron Plugs.
1 30-inch Bonnet.
2 24-in. Ships Sockets.
Bars round Iron, 4 ⅝, 3 ¾, 3 ½, 2 ⅝.
700 lbs. Old Wrought Iron Scrap.
11 Wrought Iron Hoops for 24-in. Pipes.
1 Spare Side Strap.
1 Wrought Iron Band for Air Vessel.
10 Bucket Brackets.
18 Taps.
1 Tap Brass ¾-in.
2 Old Lightning Rods.
1 Screw and link of blow off.
1 Cast Iron Square Pinion for Breast Wheels.
2 New Friction Wheels for side Rod of Turbine.
2 Old Friction Wheels.
7 Spare side Plates for Breast Wheels.
1 Old Gate Motion.
1 New Gate Motion Wheel
6 Spare Spur Gear Segments of Breast Wheels.
2 Centre Segments of Breast Wheels.
1 Cast Iron foot for shaft of Wheel.
4 Spare Arms.
6 New Shoot Covers for Turbine.
1 Wrought Iron Machine.
8 Square Footpath Plates.
63 lbs Copper.
2 New Valves for Turbine.
3 Wrought Iron Bands from old Air Vessels.
2 Pieces 30-in. Cast Iron Pipe.
5 30-in. Slip Sockets.
2 Forks, 30 and 24-in.
31 Feet of 24-in. Cast Iron Pipes.

SUNDRY MATERIALS.

7 3-in. Planks and 6 Boards.
75 Feet Flatted Hemlock.
24 Cedar Posts.
20 Hemlock Blocks.
Maple Cogs—41 2-in , 12 2-in. 204 3-in., and 18 2½-in.
91 Hickory Teeth for Turbine.
3 Doors.
1 Large Window.
2 Windows.
70 Boxes for Sheet Iron.
368 Sheets of Painted Roofing Iron.
85 Feet Gas Tube.
200 Plates.
12 India Rubber Bags.
10 lbs. India Rubber.
50 Feet India Rubber Hose.
1½ Package Fuse.

TOOLS AND UTENSILS—(Continued.)

2 Packages Lamp Black.
2 Gallons Coal Tar.
25 Fathoms 7-in. Manilla Rope, and 18 2½-in.
25 Fathoms 4-in. Manilla Rope.

UTENSILS.

5 Coal Stoves.
13 Lengths of 7-in. Stove Pipe and 2 Elbows.
1 Iron Barrel.
20 Oil Cans.
4 Tin Candle Sticks.
5 Lamp Chimneys.
9 Scrubbing Brushes.
5 Mops.
10 Old Lamps.
1 Old Copper Air Vessel.
3 Old Coal Stoves.
1 Tin Barrel.
5 Buckets.
11 Corn Brooms.
7 Tin Drinking Cups.
53 Lengths of 7 and 9-in. Stove Pipes.
12 Lengths of 6-inch Sewer Pipe
2 Large Sponges.
1 Round Lamp.
2 Tin Lamps.
5 Large Square Lamps.
2 Hanging Lamps.
4 Dozen of Lamp Wicks.
2 Folding Slates.
1 Sand Glass.
3 Coal Scuttles.
1 Eight Day Clock.
1 Dozen of Iron Seats.
1 Bunk and 2 Buffalo Robes.
5 Water Pails.
2 Zinc Oil Barrels.
1 Set of Standard Measures.
63 Lengths of 7-in. Stove Pipe and 3 Elbows.
3 Brushes.
1 Boxwood Measuring Rod.
1 Lead Telegraph Weight.
3 Thermometers.
1 Union Jack.
1 Skiff.
3 Sets of Skiff Oars.
1 Scow.
4 Wooden Settees.

PATTERNS.

1 Pattern for Large Bevel Pinion.
1 " of Segment of Breast Wheel.
1 " Sluice Gate.
1 " Girders.
1 " Bridge Bracket.
1 " Small Bevel Pinion.
2 " Pillow Blocks.
1 " Spur Pinion.
1 " Wicket Gate for Turbine.
1 " 16-in. Valve.
1 " 12-in. Valve.
1 " 10-in. "
1 " 6-in. "
1 " 4-in. "
17 " Plugs and Bonnets of different sizes.
1 " Cliffs' Wheel-turning Apparatus.
1 " Spur Pinion of Breast Wheel.
6 " Hydrants.
1 " Hydrant Post.
1 " Taper Pipe, 12x10 in.
1 " " 10x 6 in.
1 " " 4x 3 in.
1 " Cross Pipe, 12x 4 in.
1 " " 6x 4 in.
1 " " 10x 4 in.
1 " " 4x 4 in.
3 " " 3x 4 in.
1 " Hydrant Frame.
3 " different Hydrant Covers.
5 " Valve Covers.
2 " 6-in. Pipe.
1 " 4-in. "
1 " 12-in. "
1 " 10-in. "
1 " 12-in. Curve.
1 " 10-in. "
1 " 4-in. Elbow.
1 " Spur Pinion.
2 " Small "
1 " 24-in. Valve.
3 " Shaft Brasses.
1 " 4-in. Worm.
1 " Bolt 24-in. Slip Sckt.
1 " Entire " "
1 " 6-in. "
1 " 4-in "
12 " Arms of 12, 10, 6 and 4-in. Branches.

TOOLS AND UTENSILS—(Continued.)

1 Pattern of 16-in. Slip Socket.
1 Lot of Small Patterns of Plates, Bolts, Nuts, &c.
1 Pattern of Rammer.
1 " Small Bevel Pinion.
1 " 24-inch Valve at McDougall's.
1 Pattern of 12-in. "
1 " 4-in. "
1 " 10-in. "
1 " 6-in. "
1 " 6-in. Double Bend.
1 " 4-in. "
1 " Dble. Branch 6x4-in.
1 " " 4x4-in.
1 " Taper Pipe 6 to 4-in.
1 " Cleave 24-in.
1 " " 6 "
1 " " 4 "
1 " " 3 "
1 " Single B'nch 10x4-in.
1 " Valve Cover.
1 " Service Plate.

STORES.

2 Gallons Coal Oil.
2 " Olive Oil.
1 Barrel Tallow.
½ " Soft Soap.
¾ Box Candles.
20 lbs. Soap.
35 " Sheet Lead.
20 " Lead.
100 ft. of old Rope.
20 lbs. Rope Yarn.
5 " Sole Leather.
5 " Sulphur.
1 Gall. black Varnish.
25 lbs. Cotton Waste.
2 Brls. Cotton Waste, soiled.
30½ lbs. Yellow Ochre.
¾ Keg Red Paint.
9 Sheets Emery Cloth.
¼ Brl. Cement.
3 Boxes Smith Coals.
3 lbs. Black Varnish.
3 Galls. Linseed Oil.
½ Keg Vermillon.
½ Brl. Brown Ochre.
50 Tons Lehigh Coal.
40 lbs. Potash.

AT RESERVOIR.

8 Crow Bars.
1 Iron Shovel.
2 Wood Shovels.
1 Iron Pounder.
2 Cold Chisels.
1 Screw Wrench.
2 Stoves.
1 Gun.
1 Wire Seive.
2 Pick Axes.
2 Rain Gauges.
1 Snow Gauge.
1 Evaporation Gauge.
3 Thermometers.
1 Union Jack.
1 Glass Lamp.
1 Coal Scuttle.
21 Lengths 3 Elbows Stove Pipes.

AT GATE ON AQUEDUCT.

2 Iron Shovels.
2 Wood "
1 Axe.
1 Glass Lamp.
1 Wheel Barrow.
3 Snaiths and Scythes.
1 Short Snaith.
1 Thermometer.
1 Sounding Line.
1 Grabbing Iron.
1 Sounding Lead.
1 Rope, 9 Yards.
4 Ice Chisels.
1 Rifle, "Ballad."
2 Iron Rakes.
1 Sounding Rod.
2 Picks.
2 Gauge Rods.

AT ENTRANCE OF AQUEDUCT.

4 Iron Chains.
1 Iron Shovel.
6 Iron Chisels.
1 Wooden Shovel.
2 Coils Rope, 100 yards.
1 Sounding Line, 70 yards.
300 feet Safety Fuse.
14 Tubes for Blasting.
6 Peck Poles.
50 Yards of old Rope.
2 Kegs of Powder.
8 Rubber Bags.
1 Skid.

TOOLS AND UTENSILS—(Continued.)

OFFICE.

1 Mahogany Writing Desk with Stool.
1 Mahogany Writing Desk and Table.
1 Pine Drawing Table.
1 Book Case.
1 Wash Stand and Basin.
7 Chairs.
1 City Map.
4 Boxes for old documents.
3 Drawing Boards.
2 Letter Presses.
1 Time Piece.
28 Yards of Oil Cloth.
15 Yards Matting.
1 Transit Instrument with Box complete.
1 Level Instrument with Rod and Box complete.
1 Prismatic Compass with other Surveying Instruments.
1 Current Meter.
1 Tin Box for Plans.
1 Chain.
Drawing Instruments.

Since my last year's Report the Water Works yard on Craig Street has been taken up for building the Drill Shed, and the Department had to acquire another yard on Campeau Street, from Mr. W. Wilson, for the sum of $2,800. This yard has 169 feet front on Campeau Street by 84 feet in depth, and it is used as a depot for the cast iron pipes, timber, stones, machinery, &c., belonging to the Department.

This yard, however, is not in my opinion a suitable place to which the work-shops could be removed, being too far from the centre of the city. I would therefore recommend that another lot be acquired in a more central situation, and of sufficient size to build the necessary work-shops, leaving the present one for other purposes.

In closing my report, I take pleasure in testifying to the efficient aid received from the Engineer and men at the Wheel House, the Foreman of the Works in the City, and from all the other employés of the Department for the faithful performance of the several duties devolving upon them.

Respectfully submitted.

LOUIS LESAGE,
Superintendent of Water Works.

MONTREAL, 28th March, 1868.

APPENDIX.

SCHEDULE No. 1, shewing the WATER LEVELS of the the MONTREAL AQUEDUCT with the TEMPERATURE The Observations are all taken at Nine o'clock every

DATE 1867.		At Entrance of Aqueduct.	At Knox's Mill.	At Crawford's Farm.	At Tail Race.	At Rock Gates.	At Wheel House.	Differ'nce of level from Entrance to Knox's Mill.	Differ'nce of level from Knox's Mill to Crawford.
December	1	....	....	....	....	36.42	36.15	....	....
	2	....	....	....	....	36 10	35.52	....	....
	3	....	....	....	....	36.37	35.65	....	....
	4	....	....	....	....	36.40	35.88	....	....
	5	....	....	....	....	36.30	35.68	....	....
	6	....	....	....	....	36.30	35.77	....	....
	7	....	....	....	....	36.30	36.03	....	....
	8	....	....	....	....	36.50	36.09	....	....
	9	36.70	....	....	....	36.35	35.88	....	....
	10	36.50	....	....	....	36.05	35.41	....	....
	11	36.60	....	....	....	36.05	35.44	....	....
	12	36.55	....	....	....	36.05	35.45	....	....
	13	36.70	....	....	....	36.07	35.45	....	....
	14	36.60	....	....	....	36.05	35.44	....	....
	15	....	....	....	....	35.95	35.51	....	....
	16	36.50	....	....	....	36.02	35.62	....	....
	17	36.60	....	....	....	36.15	35.67	....	....
	18	36.85	....	....	16.47	36.35	35.87	....	....
	19	37.05	....	....	16.39	36.50	36.02	....	....
	20	37.40	32.68	18.03	16.47	36.95	36.41	4.72	14.65
	21	37.80	32.93	18.43	16.81	37.07	36.46	4.87	14.50
	22	37.90	33.03	19.03	17.06	37.22	36.61	4.87	14.00
	23	37.45	33.28	18.88	16.64	36.85	36.42	4.17	14.40
	24	36.55	32.23	17.63	15.64	36.20	35.90	4.32	14.60
	25	36.90	32.23	17.63	15.35	36.37	35.96	4.67	14.60
	26	37.00	32.93	18.73	15.47	36.42	35.98	4.07	14.20
	27	36.60	32.73	18.83	15.56	36.12	35.80	3.87	13.90
	28	36.50	32.61	18.98	15.47	36.07	35.79	3.89	13.63
	29	....	....	....	15.14	36.12	35.71	....	....
	30	36.30	32.23	18.53	14.64	35.92	35.69	4.07	13.70
	31	35.85	31.83	19.28	14.06	35.67	35.45	4.02	12.55

RIVER ST. LAWRENCE at the LACHINE RAPIDS and at at the undermentioned points during the WINTER MONTHS. morning.

Differ'nce of level from Crawford to Tail Race.	Total differ'nce.	Differ'nce of level from Entrance to Rock Gates.	Differ'nce of level from Rock Gates to Wheel House.	Total differ'nce.	Temperature at Rock Gates.	Temperature at Wheel House.	Temperature at Reserv'ir.	Temperature at Work Shop on Notre Dame Street.
....	....	....	0.27	....	0	6	3	....
....	....	....	0.58	....	26	24	25	24
....	....	....	0.72	....	29	26	26	....
....	....	....	0.52	....	6	0	0	5
....	....	....	0.62	....	8	6	2	10
....	....	....	0.53	....	14	10	10	10
....	....	....	0.57	....	16	17	12	18
....	....	....	0.41	....	— 2	— 3	— 8	....
....	....	0.35	0.47	0.82	— 10	— 8	— 14	— 5
....	....	0.45	0.64	1.09	1	— 2	— 6	0
....	....	0.55	0.61	1.16	4	5	0	2
....	....	0.50	0.60	1.10	— 18	— 10	— 16	— 11
....	....	0.63	0.62	1.25	— 13	— 8	— 14	— 8
....	....	0.55	0.61	1.16	0	— 2	— 7	— 2
....	....	....	0.44	....	— 1	1	— 4	2
....	....	0.48	0.40	0.88	8	9	10	12
....	....	0.45	0.48	0.93	12	13	7	12
....	....	0.50	0.48	0.98	5	8	2	6
....	....	0.55	0.48	1.03	— 4	0	— 10	— 6
1.56	20.93	0.45	0.54	0.99	8	7	6	6
1.62	20.99	0.73	0.61	1.34	20	19	19	18
1.97	20.84	0.68	0.61	1.29	30	27	26	28
2.24	20.81	0.60	0.43	1.03	22	22	22	26
1.99	20.91	0.35	0.30	0.65	8	10	6	8
2.28	21.55	0.53	0.41	0.94	10	8	7	11
3.26	21.53	0.58	0.44	1.02	40	25	34	34
3.27	21.04	0.48	0.32	0.82	20	20	16	24
3.51	21.03	0.43	0.28	0.71	20	21	18	26
....	....	....	0.41	....	14	15	12	18
3.89	21.66	0.38	0.33	0.71	— 4	4	— 5	2
5.22	21.79	0.18	0.22	0.40	2	5	4	0

SCHEDULE No. 1, shewing the LEVELS of the RIVER

DATE 1868.		At Frazer's Hill.	At Entrance Aque-duct.	At Knox's Mill.	At Craw-ford's Farm.	At Tail Race.	At Rock Gates.	At Wheel House.	Differ'nce of level from Frazer's Hill to Entrance.	Differ'nce of level from Entrance to Knox's Mill.
January..	1	....	35.90	32.13	18.73	14.06	35.70	35.51	....	3.77
	2	....	36.60	32.48	19.63	14.31	35.90	35.57	....	4.12
	3	....	36.85	32.73	19.73	14.47	36.15	35.53	....	4.12
	4	37.80	37.10	32.47	19.63	14.97	36.10	35.46	0.70	4.63
	5	37.48	36.30	32.13	20.03	15.14	35.80	35.50	1.18	4.17
	6	37.38	35.95	31.73	21.23	13.72	35.77	35.46	1.43	4.22
	7	37.98	36.90	32.33	20.93	13.31	36.12	35.52	1.08	4.57
	8	38.58	37.60	32.93	20.63	13.64	36.35	35.48	0.98	4.67
	9	38.68	37.75	33.03	20.68	13.68	36.42	35.55	0.93	4.72
	10	38.33	37.10	32.43	22.43	13.47	36.17	35.45	1.23	4.67
	11	38.48	36.85	32.63	22.13	13.31	36.25	35.58	1.63	4.22
	12	38.28	36.40	32.53	23.63	13.31	35.87	35.52	1.88	3.87
	13	38.08	36.25	32.03	23.23	12.64	36.00	35.46	1.83	4.22
	14	38.28	36.30	32.03	23.03	12.76	36.02	35.47	1.98	4.27
	15	38.13	36.05	31.73	23.23	12.97	35.62	35.45	2.08	4.32
	16	38.18	36.35	32.23	23.03	13.22	35.90	35.57	1.83	4.12
	17	38.08	37.35	32.83	23.33	13.47	36.07	35.52	0.73	4.52
	18	38.13	36.70	32.13	23.48	13.10	35.87	35.43	1.43	4.57
	19	38.08	36.55	32.33	23.33	13.10	35.90	35.44	1.53	4.22
	20	38.48	37.70	32.53	23.38	12.89	36.20	35.47	0.78	5.17
	21	38.58	37.75	32.43	23.43	13.10	36.15	35.46	0.88	5.32
	22	38.23	36.65	31.73	22.73	12.76	35.95	35.45	1.58	[illegible]92
	23	37.88	36.10	31.63	22.23	12.60	35.62	35.30	1.78	4.47
	24	38.08	37.15	33.03	24.13	13.64	35.92	35.43	0.93	4.12
	25	37.48	36.00	32.03	23.53	13.10	35.47	35.34	1.48	3.97
	26	37.08	35.70	31.63	22.98	12.68	35.35	35.31	1.38	4.07
	27	36.73	35.60	29.71	22.33	12.51	35.40	35.33	1.13	5.89
	28	37.08	35.80	29.96	23.03	12.56	35.42	35.36	1.28	5.84
	29	37.28	36.05	30.06	22.73	12.56	35.52	35.34	1.23	5.99
	30	37.78	37.10	31.76	22.93	12.81	35.72	35.40	0.68	5.34
	31	37.78	37.00	32.31	23.93	12.97	35.65	35.34	0.78	4.69

ST. LAWRENCE at the LACHINE RAPIDS—*Continued.*

Differ'nce of level from Knox's Mill to Crawford.	Differ'nce of level from Crawford to Tail Race.	Total Difference.	Differ'nce of level from Entrance to Rock Gates.	Differ'nce of level from Rock Gates to Wheel House.	Total Difference.	Temperature at Rock Gates.	Temperature at Wheel House.	Temperature at Reservoir.	Temperature at Work Shop Notre Dame Street.
13.40	4.67	21.84	0.20	0.19	0.39	8	8	— 4	....
12.85	5.32	22.29	0.70	0.33	1.03	24	24	23	22
13.00	5.26	22.38	0.70	0.62	1.32	22	24	23	24
12.84	4.66	22.83	1.00	0.64	1.64	12	11	7	14
12.10	4.89	22.34	0.50	0.30	0.80	— 3	0	— 1	2
10.50	7.51	23.66	0.18	0.30	0.48	— 3	1	— 4	4
11.40	7.62	24.67	0.78	0.60	1.38	— 4	— 3	— 4	— 4
12.30	6.99	24.94	1.25	0.87	2.12	18	20	14	14
12.35	7.00	25.00	1.33	0.87	2.20	18	18	18	18
10.00	8.96	24.86	0.93	0.72	1.65	— 2	5	— 3	0
10.50	8.82	25.17	0.60	0.67	1.27	— 3	2	— 8	— 2
8.90	10.32	24.97	0.53	0.35	0.88	— 8	— 4	— 12	— 8
8.80	10.59	25.44	0.25	0.54	0.79	— 2	0	— 3	— 2
9.00	10.27	25.52	0.28	0.55	0.83	— 8	2	— 5	— 2
8.50	10.26	25.16	0.43	0.17	0.60	— 2	2	7	— 2
9.20	9.81	24.96	0.45	0.33	0.78	8	9	7	8
9.50	9.86	24.61	1.28	0.55	1.83	14	15	12	16
8.65	10.38	25.03	0.83	0.44	1.27	10	10	10	10
9.00	10.23	24.98	0.65	0.46	1.11	2	0	1	2
9.15	10.49	25.59	1.50	0.73	2.23	22	20	17	20
9.00	10.33	25.48	1.60	0.69	2.29	16	14	10	18
9.00	9.97	25.47	0.70	0.50	1.20	4	16	8	8
9.40	9.63	25.28	0.48	0.32	0.80	30	26	23	26
8.40	10.49	24.44	1.23	0.49	1.72	32	30	28	30
8.50	10.43	24.38	0.53	0.13	0.67	13	13	7	20
8.65	10.30	24.40	0.35	0.04	0.39	— 4	— 6	— 8	0
7.38	9.82	24.22	0.20	0.07	0.27	— 3	— 6	— 7	— 6
6.93	10.47	24.52	0.38	0.06	0.44	— 5	— 12	— 8	....
7.33	10.17	24.72	0.71	0.18	0.89	8	4	6	8
8.83	10.12	24.97	1.38	0.32	1.70	12	11	7	13
8.38	20.96	24.81	1.35	0.31	1.66	20	17	17	20

SCHEDULE No. 1, shewing the LEVELS of the RIVER

DATE 1868.	At Old Church.	At Frazer's Hill.	At Entrance of Aqueduct.	At Knox's Mill.	At Crawford's Farm.	At Tail Race.	At Rock Gates.	At Wheel House.	Differ'nce of level from Old Church to Frazer's Hill.	Differ'n of leve from Frazer' Hill to Entranc
ruary 1	....	37.78	37.00	32.06	24.33	12.93	35.60	35.33	....	0.78
2	....	37.58	36.70	31.56	23.83	12.81	35.60	35.34	....	0.88
3	....	37.28	36.10	30.56	23.53	12.72	35.55	35.35	....	1.18
4	....	36.73	35.55	30.91	24.13	12.64	35.35	35.20	....	1.18
5	....	36.83	35.55	30.41	23.73	12.97	35.25	35.20	....	1.28
6	....	37.38	36.60	31.76	23.43	13.01	35.45	35.23	....	0.78
7	....	37.88	37.20	33.03	24.33	14.06	35.65	35.20	....	0.68
8	....	37.63	36.95	32.63	25.13	13.81	35.55	35.20	....	0.68
9	....	37.88	37.20	33.53	24.43	13.81	35.60	35.20	....	0.68
10	....	37.88	37.20	33.73	25.13	13.81	35.65	35.20	....	0.68
11	....	37.73	37.00	33.33	25.73	14.15	35.60	35.20	....	0.73
12	....	38.03	37.30	33.73	25.83	14.56	35.70	35.20	....	0.73
13	....	37.68	36.90	33.23	25.83	14.81	35.60	35.20	....	0.78
14	....	37.08	36.00	32.03	25.63	14.56	35.40	35.20	....	1.08
15	....	37.08	36.20	32.73	26.73	14.97	35.45	35.25	....	0.88
16	....	37.03	36.20	32.83	25.46	14.93	35.40	35.20	....	0.83
17	....	36.73	36.00	32.38	25.63	14.85	35.40	35.20	....	0.73
18	....	36.93	36.15	32.38	25.93	14.81	35.42	35.23	....	0.78
19	....	36.78	36.05	32.73	26.83	15.01	35.45	35.22	....	0.73
20	....	36.73	36.00	32.63	26.18	14.97	35.40	35.21	....	0.73
21	....	36.78	36.15	32.83	25.83	15.01	35.50	35.20	....	0.63
22	....	36.28	35.70	31.83	25.23	14.89	35.35	35.20	....	0.58
23	....	35.98	35.35	31.73	26.03	14.72	35.30	35.20	....	0.63
24	....	36.13	35.45	31.73	26.38	14.64	35.15	35.02	....	0.68
25	39.40	36.03	35.30	30.86	25.63	14.81	35.10	35.00	3.37	0.73
26	38.85	35.63	35.00	30.26	25.23	14.56	35.00	34.90	3.22	0.63
27	38.85	35.68	35.00	30.51	24 93	14.71	34.75	34.70	2.17	0.68
28	39.05	35.73	35.05	30.61	25.03	14.89	34.50	34.36	3.32	0.68
29	39.40	36.08	35.35	31.26	25.33	14.93	34.70	34.47	3.32	0.73

LAWRENCE at the LACHINE RAPIDS—*Continued.*

Differ'nce of level from Knox's Mill to Craw-ford.	Differ'nce of level from Crawford to Tail Race.	Total differ'nce.	Differ'nce of level from Entrance to Rock Gates.	Differ'nce of level from Rock Gates to Wheel House.	Total differ'nce.	Temper-ature at Rock Gates.	Temper-ature at Wheel House.	Temper-ature at Reserv'ir.	Temper-ature at Work Shop on Notre Dame Street.
7.73	11.40	24.85	1.40	0.27	1.67	24	20	17	20
7.73	11.02	24.77	1.10	0.26	1.36	20	19	19	24
7.03	10.81	24.56	0.55	0.20	0.75	— 15	— 12	— 17	— 10
6.78	11.49	24.09	0.20	0.15	0.35	8	6	6	6
6.68	10.76	23.86	0.30	0.05	..35	0	— 3	— 10	....
8.33	10.42	24.37	1.15	0.22	1.37	20	17	15	....
7.50	10.27	23.82	1.55	0.45	2.00	3	10	0	10
7.50	11.32	23.82	1.40	0.35	1.75	— 15	0	— 7	— 12
9.10	10.62	24.07	1.60	0.40	2.00	21	16	18	22
8.60	11.32	24.07	1.55	0.45	2.00	— 6	0	— 12	— 2
7.60	11.58	23.58	1.40	0.40	1.80	— 20	— 12	— 16	— 15
7.90	11.27	23.47	1.60	0.50	2.10	10	10	10	10
7.40	11.02	22.87	1.30	0.40	1.70	8	8	8	8
6.40	11.07	22.52	0.60	0.20	0.80	0	7	— 4	2
6.00	11.76	22.11	0.75	0.20	0.95	8	6	3	8
7.37	10.53	22.10	0.80	0.20	1.00	16	15	14	18
6.75	10.78	21.88	0.60	0.20	0.80	20	19	16	18
6.45	11.12	22.12	0.73	0.19	0.92	2	12	3	6
6.90	11.82	21.77	0.60	0.23	0.83	18	18	18	18
6.45	11.21	21.76	0.60	0.19	0.79	30	29	29	26
7.00	10.82	21.77	0.65	0.30	0.95	14	14	12	22
6.60	10.34	21.39	0.35	0.15	0.55	— 8	— 4	— 14	— 8
5.70	11.31	21.26	0.05	0.10	0.15	— 10	— 4	— 14	— 8
5.35	11.74	21.49	0.30	0.13	0.43	— 8	— 6	1	— 8
5.23	10.82	24.59	0.20	0.10	0.30	— 6	— 12	— 6	— 4
5.03	10.67	24.29	0.00	0.10	0.10	— 2	4	1	— 2
5.58	10.22	24.14	0.25	0.05	0.30	10	8	6	8
5.58	10.14	24.16	0.55	0.14	0.69	22	23	12	18
5.93	10.40	24.47	0.65	0.23	0.88	4	6	1	8

SCHEDULE No. 1, shewing the LEVELS of the RIVER

TE 68.	At Old Church.	At Frazer's Hill.	At Entrance of Aque-duct.	At Knox's Mill.	At Craw-ford's Farm.	At Tail Race.	At Rock Gates.	At Wheel House.	Differ'nce of level from Old Church to Frazer's Hill.	Differ'nce of level from Frazer's Hill to Entrance.
pril 1	40.81	37.90	37.10	32.53	17.80	14.47	36.90	36.27	2.91	0.80
2	40.96	38.00	37.20	32.63	16.70	13.97	37.00	36.48	2.96	0.80
3	40.96	38.00	37.20	32.68	16.70	13.71	37.10	36.33	2.96	0.80
4	51.06	38.10	37.30	33.03	17.60	15.22	36.90	36.59	2.96	0.80
5	41.11	38.05	37.25	32.83	20.40	12.72	36.90	.....	3.09	0.80
6	40.96	37.95	37.15	32.98	19.50	12.47	36.90	36.70	3.01	0.80
7	40.96	37.90	37.15	32.93	18.40	11.47	37.00	36.80	3.06	0.75
8	41.11	38.00	37.25	33.13	17.90	11.06	37.00	36.93	3.11	0.75
9	40.91	37.90	37.05	32.93	17.50	10.81	36.20	35.38	3.01	0.85
10	40.91	37.85	37.00	32.63	17.00	.....	36.60	35.95	3.06	0.85
11	40.96	37.95	37.05	32.68	17.53	.....	36.70	36.25	3.01	0.90
12	40.96	37.85	37.05	32.53	14.85	.....	37.20	*37.20	3.11	0.80
13	40.81	37.75	36.95	32.48	13.31	.....	.....	.....	3.06	0.80
14	40.81	37.70	36.85	32.43	12.21	.....	36.45	35.88	3.11	0.85
15	40.81	37.75	36.90	32.48	11.71	.....	36.55	36.00	3.06	0.85
16	40.91	37.80	36.95	32.73	11.71	.....	36.55	.....	3.11	0.85
17	41.01	37.90	37.00	32.83	11.71	.....	36.70	36.30	3.11	0.95
18	41.11	38.05	37.20	32.88	11.66	.....	36.85	36.45	3.06	0.85
19	41.21	38.05	37.35	32.93	11.66	.....	36.95	36.64	3.16	0.70
20	41.26	38.25	37.35	32.98	11.66	.....	37.20	36.85	3.01	0.90
21	41.21	38.25	37.40	32.88	11.56	.....	37.20	37.05	2.96	0.85
22	41.26	38.30	37.45	32.93	11.61	.....	37.25	37.08	2.96	0.85
23	41.31	38.20	37.40	33.23	11.61	.....	37.20	36.98	3.11	0.80
24	41.51	38.45	37.60	33.18	11.66	.....	37.45	37.24	3.06	0.85
25	41.51	38.40	37.55	33.13	11.66	.....	37.35	37.12	3.11	0.85
26	41.56	38.45	37.60	33.13	11.61	.....	37.45	37.20	3.11	0.85
27	41.56	38.45	37.60	33.18	11.71	.....	37.45	37.26	3.11	0.85
28	41.56	38.50	37.65	33.18	11.66	.....	37.45	37.24	3.06	0.85
29	41.51	38.40	37.55	33.23	11.71	.....	37.40	37.20	3.11	0.85

* On this day the Wheels were stopped.

ST. LAWRENCE at the LACHINE RAPIDS—*Continued.*

ffer'nce level from ntrance to nox's Mill.	Differ'nce of level from Knox's Mill to Crawford.	Differ'nce of level from Crawford to Tail Race.	Total differ'nce.	Differ'nce of level from Entrance to Rock Gates.	Differ'nce of level from Rock Gates to Wheel House.	Total differ'nce.	Temperature at Rock Gates.	Temperature at Wheel House.	Temperature at Reserv'ir.
4.57	14.73	3.33	26.34	0.20	0.63	0.83	48	53	50
4.57	15.93	2.73	26.99	0.20	0.52	0.72	34	31	29
4.52	15.98	2.99	27.25	0.10	0.77	0.87	30	38	28
4.27	15.43	2.38	25.84	0.40	0.31	0.71	34	38	35
4.42	12.43	1.68	28.39	0.35	....	....	14	..	..
4.17	13.48	1.03	28.49	0.25	0.20	0.45	18	25	14
4.22	14.53	6.93	29.49	0.15	0.20	0.35	32	30	28
4.12	15.23	6.84	30.05	0.25	0.07	0.32	33	29	28
4.12	15.43	6.69	30.10	0.85	0.82	1.67	14	25	18
4.37	15.63	....	.....	0.40	0.65	1.05	30	30	18
4.37	15.15	....	.....	0.35	0.45	0.80	38	34	32
4.52	17.68	....	.....	....	0.00	....	20	23	18
4.47	19.17	....	.....	....	....	....	..	..	..
4.42	20.22	....	.....	0.40	0.57	0.97	38	42	34
4.42	20.77	....	.....	0.35	0.55	0.90	44	45	48
4.22	21.02	....	.....	0.40	....	....	42	..	62
4.17	21.12	....	.....	0.30	0.40	0.70	54	52	51
4.32	21.22	....	.....	0.35	0.40	0.75	38	37	36
4.42	21.27	....	.....	0.40	0.31	0.71	44	49	40
4.37	21.32	....	.....	0.15	0.35	0.50	50	53	49
4.52	21.32	....	.....	0.20	0.15	0.35	52	57	50
4.52	21.32	....	.....	0.20	0.17	0.37	48	50	44
4.17	21.62	....	.....	0.20	0.22	0.42	28	24	23
4.42	21.52	....	.....	0.15	0.21	0.36	38	43	35
4.42	21.47	....	.....	0.20	0.23	0.43	40	39	37
4.47	21.52	....	.....	0.15	0.25	0.40	38	33	..
4.42	21.47	....	.....	0.15	0.19	0.34	42	43	37
4.47	21.52	....	.....	0.20	0.21	0.41	40	43	38
4.32	21.52	....	.....	0.15	0.20	0.35	50	47	48

2th and 13th APRIL, 1868.

Commence at.	TURBINE WHEEL.					Rate of the Total of Gallons pumped per 24 Hours.	REMARKS.
	kes r ur.	No. of Gallons Pumped per Hour.	Rate of Gallons Pumped per 24 Hours.	Strokes per Minute.	Pressure in lbs. per Square Inch.		
4.30 P.M		*	....	......	....	....	April 8th.
5.00 "	16	55,728	2,674,944	7.20	80	6,930,240	
6.00 "	43	165,894	3,981,456	10.71	77	8,538,672	
7.00 "	06	156,348	3,752,352	10.10	79	8,906,304	
8.00 "	70	147,060	3,529,440	9.50	79	8,750,880	
9.00 "	56	143,448	3,442,752	9.26	79	8,497,248	
10.00 "	63	119,454	2,866,896	7.71	79	7,623,024	
11.00 "	97	128,226	3,077,424	8.28	78	7,854,864	
12.00 "	85	125,130	3,033,120	8.08	78	7,657,824	
1.00 A.M	04	104,232	2,501,568	6.73	70	7,051,680	April 9th.
2.00 "	05	104,490	2,507,760	6.75	77	7,082,736	
3.00 "	70	121,260	2,910,240	7.83	75	7,368,000	
4.00 "	80	98,040	2,352,960	6.33	77	6,640,224	
5.00 "	55	91,590	2,198,160	5.09	77	6,265,200	
6.00 "	57	66,306	1,591,344	4.28	75	5,328,048	
7.00 "	70	95,460	2,291,040	6.16	75	4,400,928	
8.00 "	71	121,518	2,916,432	7.85	74	5,541,360	
10.10 "	..	......	....	......	82	....	April 12th. Commen
11.00 "	50	193,500	4,644,000	12.50	80	11,034,048	at 10 A. M.
‡12.00 No	25	187,050	4,489,200	12.08	79	10,275,408	At 12.30 the Sluice lo
1.00 P.M	99	77,142	1,851,408	4.98	40	7,612,752	to 2 inches.
2.00 "	54	13,932	334,368	0.90	76	6,422,496	
3.00 "	06	207,948	4,990,752	13.43	77	8,194,656	Recommenced at 2 P
4.00 "	48	218,784	5,250,816	14.13	77	8,422,742	
5.00 "	14	210,012	5,040,288	13.57	77	8,123,424	
6.00 "	44	217,752	5,226,048	14.06	77	8,184,864	
7.00 "	56	220,848	5,300,352	14.26	77	8,248,512	
8.00 "	50	219,300	5,263,200	14.16	77	8,214,912	
9.00 "	60	221,880	5,325,120	14.33	77	8,067,264	
10.00 "	44	217,752	5,226,048	14.06	77	7,957,536	
11.00 "	62	222,396	5,337,504	14.36	77	8,275,008	
12.00 "	72	224,976	5,399,424	14.53	77	8,180,640	
1.00 A.M	93	204,594	4,910,256	13.21	77	7,702,128	April 13th.
2.00 "	01	206,658	4,959,792	13.35	77	7,620,240	
3.00 "	69	224,202	5,380,848	14.48	77	8,257,968	
4.00 "	49	219,042	5,257,008	14.15	77	8,020,464	
5.00 "	25	212,800	5,108,400	13.75	78	7,829,232	
6.00 "	60	221,880	5,325,120	14.33	78	8,085,024	Aqueduct entirely c
7.00 "	35	215,430	5,070,320	13.92	78	7,905,360	of ice.

wn to lowest point.

sheet of ice on the Aqueduct at Entrance.

EXPERIMENTS made to ascertain the AMOUNT of WATER passing through the AQUEDUCT, and also to measure the Amount used by the Wheels on the dates mentioned.

Conditions under which the Experiments were used.	Date of Experiment and Machinery used.	
	16th July, 1866, Two Breast Wheels.	15th April, 1868, One Breast and Turbine.
Level of Water in Aqueduct, at Entrance	37.90	36.90
" " Rock Stop Gate	36.20	36.55
" " Wheel House	35.88	36.00
Level of Water in Tail Race	22.00	22.00
Total fall on Wheels in feet	13.88	14.00
Double strokes per minute of Breast Wheel Pumps	14.50	13.30
" " Turbine " "	....	13.37
Duty equal to Imperial Gallons raised to Reservoir in 24 hours by Breast Wheel Pumps	6,173,380	2,804,940
Duty equal to Imperial Gallons raised to Reservoir in 24 hours by Turbine Wheel Pumps	....	4,473,660
Pressure on Pumps in lbs per square inch	83	80
Mean velocity of water in Auqueduct, in feet per minute:—		
By a Float	69.95	69.37
By Current Meter	61.10	56.23*
Area of Section of Aqueduct at place of Experiment, square feet	312	306.36†

RESULT OF CALCULATIONS.

Total discharge of Aqueduct, in cubic feet per minute:—

	16th July, 1866.		15th April, 1868.	
	By Float.	By Meter.	By Float.	By Meter.
	21,840	19,063	21,252	17,227
Deduct used by the Pumps.. 688	......	......	813	813

SEP